The City of Bellevue
Development Services Department
Land Use Staff Report

Proposal Name:	**Meydenbauer Vegetation Management**
Proposal Address:	**707 94th Avenue SE**
Proposal Description:	The applicant requests a Critical Area Land Use Permit to approve a Vegetation Management Plan to mitigate for disturbance of a steep slope critical area for new utility access to an existing single-family residence.
File Number:	**20-100006-LO**
Applicant:	**Kenji Hoshide, Hoshide Wanzer Architects**
Decisions Included:	Critical Areas Land Use Permit (Process II. LUC 20.30P)
Planner:	**Mark C. Brennan**, Associate Land Use Planner
State Environmental Policy Act Threshold Determination:	**Exempt**
Director's Decision:	**Approval with Conditions** *Elizabeth Stead* Elizabeth Stead, Land Use Director Development Services Department

Application Date:	January 2, 2020
Notice of Application Publication Date:	February 6, 2020
Decision Publication Date:	June 25, 2020
Project/SEPA Appeal Deadline:	July 9, 2020

For information on how to appeal a proposal, visit Development Services Center at City Hall or call (425) 452-6800. Comments on State Environmental Policy Act (SEPA) Determinations can be made with or without appealing the proposal within the noted comment period for a SEPA Determination. Appeal of the Decision must be received in the City's Clerk's Office by 5 PM on the date noted for appeal of the decision.

I. PROPOSAL DESCRIPTION

The applicant requests a Critical Area Land Use Permit (CALUP) Vegetation Management Plan to mitigate for disturbance of a steep slope critical area (within an NGPA) for new utility access to an existing single-family residence. . The subject site is located at 707 94th Avenue SE and contains steep slope critical area disturbed by trenching. The proposed residence was reviewed under file #17-113498-BS.

The disturbance to the critical area occurring during the construction process. Puget Sound Energy (PSE) advised the owner that the existing (electrical) supply line to the new residence was insufficient and recommended new conduit be trenched and installed. Concurrently, it was determined that a new water line needed to be installed to meet the demands of the required fire-suppression system for the new residence. In order to minimize potential impacts to the existing steep slope from two separate utility trenches, a single trench was provided to combined both the new electrical and water supply lines. The trench was completed with sufficient backfill. This application includes the vegetation management plan to restore the impact to the steep slope to its prior condition.

Figure 1: Site Aerial Image

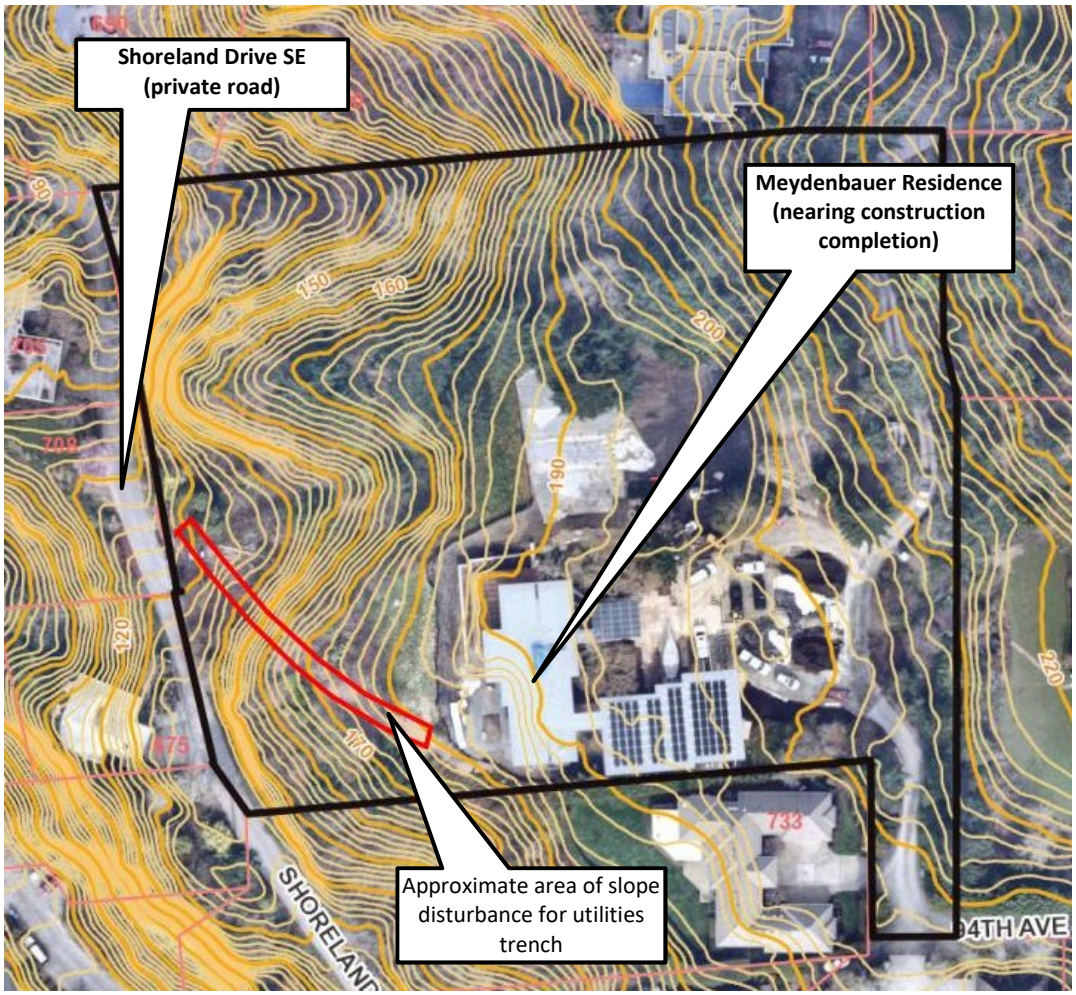
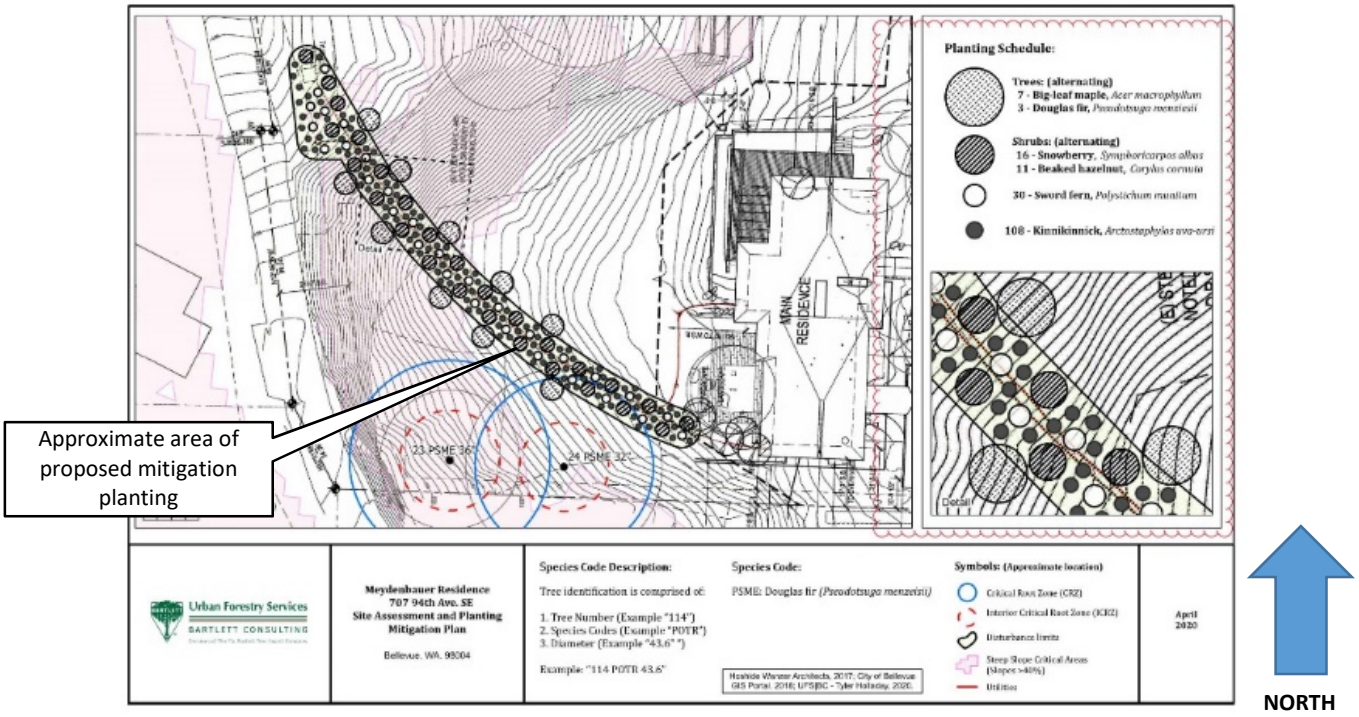


Figure 2: Site Assessment and Planting Mitigation Plan



II. CONSISTENCY WITH LAND USE ZONING REQUIREMENTS

Vegetation Management Plan Performance Standards LUC 20.25H.055.C.3.v.i

(A) Is the Vegetation Management Plan prepared by a qualified professional?

Yes ☒ or No ☐
Describe:
Plan Preparer's Name: Tyler P. Holladay
Company: Urban Forestry Services/Bartlett Consulting
Address: 15119 McLean Road, Mount Vernon, WA 98273
Phone: 360-428-5810
Statement of Qualifications: ISA Certified Arborist #PN-8100A
ISA Tree Risk Assessment Qualified

(B) Does the Vegetation Management Plan include the following?

(1) A description of existing site conditions, including existing critical area functions and values

Yes ☒ or No ☐
Describe: Existing site conditions include a non-vegetated mulched corridor approximately 10 ft-wide by 150 ft-long (1,500 SF) that was previously cleared for the utility trenching described above. The surrounding vegetation is a dense combination of native and non-native plants. Vegetation condition is fair due in part to repeated pruning of numerous adjoining tall trees.

(2) A site history;

Yes ☒ or No ☐

Describe: See Section I – Proposal Description for a site history as it pertains to the steep slope disturbance.

(3) A discussion of the plan objectives;

Yes ☒ or No ☐

Describe: To replace the lost vegetated cover within the steep slope critical area with native plants.

(4) A description of all sensitive features;

Yes ☒ or No ☐

Describe: The site contains steep slope critical area. Refer to the Geotechnical Engineering Study by Geotech Consultants in Attachment B.

(5) Identification of soils, existing vegetation, and habitat associated with species of local importance present on the site;

Yes ☒ or No ☐

Describe: Refer to the Geotechnical Engineering Study by Geotech Consultants in Attachment B. Existing vegetation is a diverse composition of native and non-native plant species. Native species observed on site include sword fern, salal, red alder, beaked hazelnut, Douglas fir, and big-leaf maple. Non-native species observed include red oak and cherry laurel. Invasive species observed include English Ivy and Himalayan blackberry.

(6) Allowed work windows;

Yes ☒ or No ☐

Describe: The annual schedule of primary maintenance includes a work window for monitoring from March 1st through August 31st and a work window for weeding from June 1st through September 30th. It is recommended that the planting occur in the spring or fall to ensure successful establishment of plant material. **Refer to the Condition of Approval regarding Rainy Season Restrictions in Section VIII of this report**.

(7) A clear delineation of the area within which clearing and other vegetation management practices are allowed under the plan; and

Yes ☒ or No ☐

Describe: Refer to Figure 2 below and the Site Assessment and Planting Mitigation Plan by Urban Forestry Services, Inc. in Attachment A.

(8) Short- and long-term management prescriptions, including characterization of trees and vegetation to be removed, and restoration and revegetation plans with native species, including native species with a lower growth habit. Such restoration and revegetation plans shall demonstrate that the proposed Vegetation Management Plan will not significantly diminish the functions and values of the critical area or alter the forest and habitat characteristics of the site over time.

Yes ☒ or No ☐
Describe: The proposed plan to restore the existing area of disturbance with new trees and vegetation will provide erosion control function to further stabilize the steep slope and address stormwater runoff. This will help to maintain critical area functions and values and the forest and habitat characteristics of the site over time and does not significantly change the approvals previously issued by the City under the single-family building permit (17-113498-BS) or ancillary permits and approvals. **Refer to the Condition of Approval regarding Restoration for Areas of Temporary Disturbance in Section VIII of this report**.

C.3.i.vi: Would any proposed tree removal result in a significant impact to habitat associated with species of local importance?
Yes ☐ or No ☒
Describe: Not applicable. No tree removal is proposed

III. PUBLIC NOTICE AND PARTIES OF RECORD

Application Date:	January 2, 2020
Public Notice (500 feet):	February 6, 2020
Minimum Comment Period:	February 20, 2020

The Notice of Application for this project was published in the City of Bellevue Weekly Permit Bulletin on February 6, 2020. It was mailed to property owners within 500 feet of the project site. As of the writing of this staff report, two parties of record have submitted the following comments:

1. ***"There is an issue created when utilities were in the process of being upgraded which resulted in road cuts that have further compromised the road surface by improper sealing and closure. The patch job was insufficient and will not last over time and for the current level of traffic on the roadway."***
Response: The City does not have any maintenance responsibility for private roads. Shoreland Drive SE is a private road subject to private agreements related to maintenance and access. The paving patch on the private road is temporary. To complete the electrical connection to the new residence, PSE will be working in this area to pull wires and make connections to the transformer on the lower street next to the temporary patch. After the underground connections between the conduit and transformer are completed, there will be full repair of this road, including the temporary patched area. This additional work will be accomplished under a post-Issuance revision to the single-family permit 17-113498-BS. **Refer to the Condition of Approval regarding Restoration for Areas of Temporary Disturbance in Section VIII of this report.**

2. ***Since the property owner's electrical work has been done there has been a significant increase in the accumulation of ground water at the base of their site at the east side of our road (Shoreland Drive SE). To address this issue the City should require the installation of a storm drain that flows to the lake (Lake Washington).***
Response: Per the Utility Review comments in Section V below, the utility trench completed has no stormwater impacts. Installation of a storm drain to flow to Lake Washington is not

appropriate or necessary as the new construction of the residence is mitigating all of their stormwater through the use of a tank system. Additionally, the drainage pattern expected from the new construction and this trench project is to the west and consistent with the natural and existing drainage pattern existing prior to the construction. The replanting under this permit is also expected to return the drainage pattern on the site to its previous existing and natural westerly drainage pattern.

IV. STATE ENVIRONMENTAL POLICY ACT (SEPA)

Exempt.

V. TECHNICAL REVIEW

A. Utilities Review

Approved. New construction under permit 17-113498 BS is mitigating all of their stormwater on site through the use of a tank system. Natural drainage to the west is in agreement with the current drainage pattern that existed before the new construction was started. The utility trench dug to install the water line under permit 18-111660 UC has no stormwater impact. The groundcover shall be restored to native plants under the permit 20-100006 LO. This replanting should return the slope to its previous westerly drainage pattern.

B. Clear and Grade Review:

Approved. **Refer to the Conditions of Approval regarding Clearing and Grading Review and Inspection Required, Geotechnical Review, Geotechnical Inspection and Rainy Season Restrictions in Section VIII of this report.**

VI. CRITICAL AREA LAND USE PERMIT CRITERIA- LUC 20.30P.140

The Director may approve or approve with modifications an application for a Critical Areas Land Use Permit if:

A. The proposal obtains all other permits required by the Land Use Code; and

Yes ☒ or No ☐

Describe: The proposal will obtain all other permits and approvals required by the Land Use Code. **Refer to the Conditions of Approval regarding Restoration for Areas of Temporary Disturbance and Clearing and Grading Review and Inspection Required in Section VIII of this report.**

B. The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer; and

Yes ☒ or No ☐

Describe: The best available design and development technique resulting in the least impact to the critical area is to provide new native trees and associated plantings to limit the use of pesticides, insecticides, and fertilizers in accordance with the City of Bellevue's "Environmental Best Management Practices". **Refer to the Conditions of Approval regarding Pesticides, Insecticides, and Fertilizers in Section VIII of this report**.

C. The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable; and

Yes ☒ or No ☐

Describe: As discussed in Section II, the proposal has demonstrated compliance with the performance standards for vegetation management within a critical area.

D. The proposal will be served by adequate public facilities including streets, fire protection, and utilities; and

Yes ☒ or No ☐

Describe: The site is currently served by adequate public facilities. The proposal will not increase the need for public facilities on the site.

E. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan; and

Yes ☐ or No ☒

Describe: The proposal includes a vegetation management planting plan meeting the recommendations of the Critical Areas Handbook and that is consistent with the requirements of LUC 20.25H.210. **Refer to the Condition of Approval regarding Restoration for Areas of Temporary Disturbance in Section VIII of this report**.

F. The proposal complies with other applicable requirements of this code.

Yes ☒ or No ☐

Describe: Demonstration of compliance with the other applicable requirements of the Bellevue City Code will be completed under the review of the required clearing and grading permit.

VII. CONCLUSION AND DECISION

After conducting the various administrative reviews associated with this proposal, including Land Use Code consistency, SEPA, City Code and Standard compliance reviews, the Director of the Development Services Department does hereby **Approve with Conditions** the vegetation management plan within the steep slope critical area at 707 94TH Avenue SE.

Note- Expiration of Approval: In accordance with LUC 20.30P.150 a Critical Areas Land Use Permit automatically expires and is void if the applicant fails to file for a Clearing and Grading Permit or other necessary development permits within one year of the effective date of the approval.

VIII. CONDITIONS OF APPROVAL

The applicant shall comply with all applicable Bellevue City Codes and Ordinances including but not limited to:

Applicable Ordinances	Contact Person
Clearing and Grading Code: BCC 23.76	Savina Uzunow, 425-452-7860

Land Use Code: LUC 20.25H	Mark C. Brennan, 425-452-2973

The following Conditions are imposed under the Bellevue City Code or SEPA authority referenced:

1. **Restoration for Areas of Temporary Disturbance:** The Mitigation Planting Plan shall be submitted as a post-issuance revision of permit #17-113498 BS. Restoration shall be in accordance with the Site Assessment and Planting Mitigation Plan by Urban Forestry Services, Inc. in Attachment A.

   Authority: Land Use Code 20.25H.220.H
   Reviewer: Mark C. Brennan, Land Use

2. **Clearing and Grading Review and Inspection Required:** Approval of this Critical Areas Land Use Permit does not constitute an approval of any construction permit or its revision. A clearing and grading review must take place as a post-issuance revision of building permit #17-113498 BS and approval must be granted before construction and mitigation can take place. Plans submitted as part of any permit shall be consistent with the activity permitted under this approval and all geotechnical recommendations included in the Geotechnical Engineering Study.
   A clearing and grading inspection must take place under building permit #17-113498 BS to verify that the construction and mitigation are per the approved plans.

   Authority: Land Use Code 20.30P.140, Clearing & Grading Code 23.76.035
   Reviewer: Savina Uzunow, Development Services Department, Clearing & Grading Section

3. **Geotechnical Review:** The project geotechnical engineer must review the revised construction plans. A letter from the geotechnical engineer stating that the plans conform to the recommendations in the geotechnical report and any addendums and supplements must be submitted to the clearing and grading section prior to approval of the post-issuance revision of permit #17-113498 BS.

   Authority: Clearing & Grading Code 23.76.050
   Reviewer: Savina Uzunow, Development Services Department, Clearing & Grading Section

4. **Geotechnical Inspection:** The project geotechnical engineer must provide geotechnical inspection if it is required by the Clearing and Grading inspector.

   Authority: Clearing & Grading Code 23.76.050, Clearing & Grading Code 23.76.160
   Reviewer: Savina Uzunow, Development Services Department, Clearing & Grading Section

5. **Rainy Season Restrictions:** Clearing and grading activity may occur during the rainy season, which is defined as October 1 through April 30 only with the written authorization of the

Clearing and Grading Inspector.

Authority: Bellevue City Code 23.76.093.A,
Reviewer: Savina Uzunow, Development Services Department, Clearing & Grading Section

6. **Pesticides, Insecticides, and Fertilizers**: The applicant must submit as part of the required Clearing and Grading Permit information regarding the use of pesticides, insecticides, and fertilizers in accordance with the City of Bellevue's "Environmental Best Management Practices".

Authority: Land Use Code 20.25H.220.H
Reviewer: Mark C. Brennan, Land Use Division

ATTACHMENTS:

- **Attachment A:** Site Assessment and Planting Mitigation Plan by Urban Forestry Services/Bartlett Consulting.
- **Attachment B:** Geotechnical Engineering Study by Geotech Consultants.

ATTACHMENT A

Urban Forestry Services
BARTLETT CONSULTING
Divisions of The F.A. Bartlett Tree Expert Company

Title: **Meydenbauer Residence Project -**
Site Assessment and Planting Mitigation Plan
707 94th Ave. SE, Bellevue, Washington 98004

Prepared for: Roberts Group
c/o Matt Cantrell
5914 Lake Washington Blvd NE
Kirkland, WA 98033

Prepared by: Urban Forestry Services | Bartlett Consulting
Tyler P. Holladay
ISA Certified Arborist® #PN-8100A
ISA Tree Risk Assessment Qualified

Contents:

Date: April 27, 2020

Summary

Utility trenching at the southwest corner of the Meydenbauer Residence at 707 94th Ave SE, Bellevue, Washington has resulted in a roughly 1500 ft^2 (10' x 150') non vegetated mulched corridor. The corridor is located to the north of two significant private property trees and intersects a steep-slope critical area, as defined by the city of Bellevue (20.25H.030).

The two trees near and to the south of the trenching area have not been removed and are not significantly impacted by the disturbed trenching area. The trees can be safely retained at this time.

15119 McLean Road
Mount Vernon, WA 98273

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Fax: 360.428.1822
Cell: 360.770.9921

Email: jbarborinas@bartlett.com
www.urbanforestryservices.com

In accordance with the City of Bellevue's (COB) requirements for critical areas mitigation planting, Roberts Group plans to restore the impacted trenching corridor with a selection of native plant species chosen from the Bellevue Critical Areas Handbook - Steep Slope Planting Template for Sunny Sites. A planting restoration plan has been provided in this report to guide the planting process.

Introduction

As requested by Matt Cantrell of Roberts Group, I have prepared a site assessment as well as a critical areas replanting plan for a roughly 1500 ft^2 (10' x 150') corridor, disturbed during the installation of underground utilities. The city of Bellevue requires a mitigation plan for disturbances within critical areas, per COB 20.25H.030.

Scope and Purpose of the Report

1. Summarize the findings from my 12/12/19 site visit. Including existing vegetation condition and impacts to significant protected trees onsite included within the development's Tree Protection Plan TPP.
2. Provide a planting mitigation plan for the disturbed trenching corridor onsite.
3. Provide specifications for maintenance and monitoring as per COB land use code 20.25H.030.

Findings

On 12/12/19, I met Matt Cantrell of Roberts Group at the Meydenbauer Residence Project site located at 707 94th Ave SE, Bellevue, Washington. While onsite my focus was the area of trenching disturbance. I observed the level of site disturbance, the character of the surrounding existing vegetation and performed an ISA Level 1 Limited Visual Risk Assessment for two (2) large trees near and to the south of the disturbance area.

Image 1. This view to the west shows the extent of the disturbed area, now covered with a thick layer of woodchip mulch.

The area of disturbance is a roughly 1500 ft^2 (10' x 150') corridor that was previously cleared to allow for the trenching and installation of underground utilities. The corridor travels east-west and intersects a steep geologically critical area as defined by the City of Bellevue. At the time of my visit

the trenching and utilities installation had long been completed. What remains is a well mulched non-vegetated corridor.

The area of disturbance is surrounded by a diverse composition of native and non-native plant species. The character of these species is very dense and crowded. Many of the taller growing tree species in the area look to have been repeatedly reduced, or cut back to the ground. This has contributed to the over-dense character of the site. Native species observed onsite include - sword fern *(Polystichum munitum)*, salal *(Gaultheria shallon)*, red alder *(Alnus rubra),* beaked hazelnut *(*Corylus cornuta), Douglas fir *(Pseudotsuga mensiesii)*, and bigleaf maple *(Acer macrophyllum).* Non-native species observed onsite include – red oak *(Quercus rubra),* cherry laurel *(*Prunus laurocerasus*),* and English holly *(Ilex aquifolium).* Some invasive species observed onsite include – English ivy *(Hedera helix),* Himalayan blackberry *(Rubus armeniacus),*

Image 2. Facing east. The two (2) Douglas fir tree *(P. mansiesii),* Trees #23 and #24 can be seen in the background. Non-native species like red oak *(Q. rubra)* and cherry laurels *(P. laurocerasus)* can be seen framing the disturbed corridor.

Two (2) large Douglas fir trees (P. menzeisii), Trees #23 and #24, located near and to the south of the disturbed trenching area, received an ISA Level 1 Limited visual Tree Risk Assessment. These trees are included in the original Meydenbaure Residence Tree and Plant Protection Plan dated 05-11-17. I can confirm that these two (2) trees have not been removed. The trenching area has negligibly encroached within the Critical Root Zone (CRZ) of Tree#24. The two (2) trees are in good condition, exhibiting fair to good vigor, fair to good structure and present a low risk of failure. At this time, the trees may be safely retained.

Replanting Plan

(See the attached restoration planting detail)

Objectives and Performance Standards

Replanting Plan Objective:

- To comply with COB requirements by replacing the lost vegetated cover within the steep slope critical area with native species. The species chosen should be the largest commonly available size of each species.

Performance Standards:

- Survival of 100% of installed trees during the first and second year of the two (2) year monitoring period.

- Non-native (including naturalized) plant species shall not be present within an area 6-feet radius surrounding each installed plant.

Maintenance and Monitoring

Maintenance

- Removal of non-native weedy species or herbaceous material within six (6) feet radius of the ten planted trees shall take place three (3) times each growing season over 2-years.

- Weed removal shall be manual (hand pulling or digging-out). Non-native trees and native black cottonwood *(Populus trichocarpa)* and red alder (*Alnus rubra)* are not suitable species and should be removed as a weed species within the corridor.

- Mulch shall be applied throughout the corridor and around each plant, following initial weeding in year 1 and subsequently in year 2. The mulch shall be laid to maintain a total depth of four (4) inches.

Table 1 shows the timetable for primary maintenance, including weeding. See the section titled "Monitoring" below for details on this task.

Table 1: Annual schedule of primary maintenance.

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Weeding												
Monitoring												

Table 2 provides a schedule of maintenance for the tree replanting over the 2-year establishment period.

Table 2: Scheduled maintenance tasks for 2-year establishment period and beyond.

Task	Year 1	2
Monitoring		
Remove stakes and wires		
Implement invasive species and noxious weed control		
Pruning damaged, dead, diseased or dying branching		

Monitoring

Monitoring by either an ISA Certified Arborist®, or COB approved, and qualified biologist or ecological restoration specialist shall occur annually for the two (2) year period after installation.

Urban Forestry Services, Inc., or a similar qualified firm shall provide the monitoring, and monitoring reports for the two 2-year period. A monitoring report shall include:

- Number of trees in place and survival rates.
- Information on volunteer native and invasive non-native species. Natural regeneration of native species may be counted towards the performance standards.
- Reporting on any disturbance or inappropriate activities in the right-of-way.
- Photographic documentation for each component of the monitoring.
- Analysis of the progress toward establishment of the installed trees in the right-of-way based on the performance standards in this plan.
- Recommendations for maintenance, including native species substitutions of failed trees.

Let me know if you have any questions regarding this site assessment and planting mitigation plan.

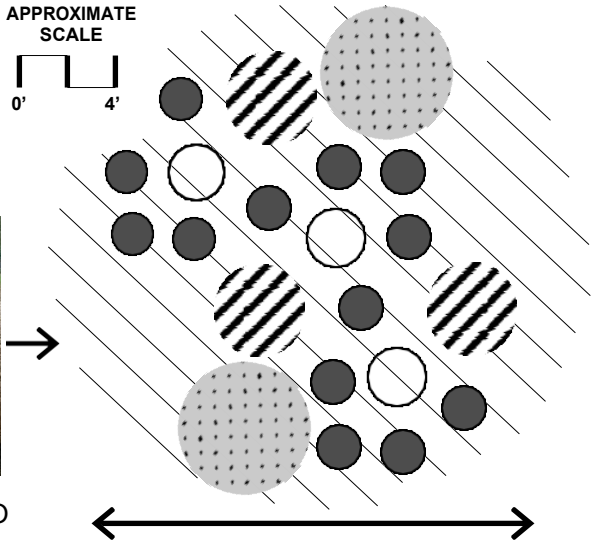
RESTORATION PLANTING DETAIL

NOT TO SCALE

THIS DETAIL SHOWS THE RECOMMENDED PLANTING DESIGN FOR THE ENVIRONMENTALLY CRITICAL AREA (ECA).

INSTALL JUTE MESH EROSION CONTROL MAT OVER PLANTING AREAS ON SLOPES >40%.

FIX JUTE MAT INTO POSITION WITH STEEL GROUND STAPLES.



THIS PLANTING AREA DESIGN COVERS APPROXIMATELY 300 SQUARE FEET.

PLANTING LOCATIONS FOR THIS PLANTING DESIGN ARE SHOWN ON THE ENCLOSED SITE PLAN.

THE PURPOSE OF THIS PLANTING IS TO REDUCE THE POTENTIAL FOR EROSION AND RESTORE NATIVE VEGETATION TO THE AREA WHERE UTILITY TRENCHING HAS IMPACTED EXISTING VEGITATION.

NOTES

1. **CLEAR THE PLANTING AREA OF NOXIOUS AND INVASIVE PLANTS AND DISPOSE OFF-SITE.**
2. **INSTALL JUTE MESH EROSION CONTROL MAT AND FIX INTO POSITION ON SLOPES >40% WITH STAPLES.**
3. **INSTALLED PLANT SPACING SHALL BE A MAXIMUM OF 3 FEET ON CENTER.**
4. **INSTALL PLANTS AS PER THE CITY OF BELLEVUE STANDARD AND MAINTAIN AS PER THE CITY OF BELLEVUE ECA STANDARD MITIGATION PLAN INSTRUCTIONS.**
5. **THE DISTURBED TRENCHING AREA MUST BE RESTORED USING THE PLANTING LAYOUT SHOWN ON THE ENCLOSED SITE PLAN. THE DESIGN ABOVE WILL NEED TO BE REPLICATED MULTIPLE TIMES TO ACHIEVE APPROPRIATE COVERAGE (EACH DESIGN COVERS ROUGHLY 256 SQFT)**

KEY

= AREA TO BE CLEARED OF NOXIOUS AND INVASIVE PLANTS. INSTALL A JUTE MESH EROSION CONTROL MAT ON >40% SLOPES. THIS AREA COVERS ~ 300 SQFT (13FT x 23FT or 9.5 FT RADIUS.)

= **BIG-LEAF MAPLE, *ACER MACROPHYLLUM* (AND) DOUGLAS FIR, *PSEUDOTSUGA MENZIESII***

= **SNOWBERRY, *SYMPHORICARPOS ALBUS* BEAKED HAZELNUT, *CORYLUS CORNUTA***

= **SWORD FERN, *POLYSTICHUM MUNITUM***

= **KINNIKINNICK, *ARCTOSTAPHYLOS UVA-URSI***

Urban Forestry Services
BARTLETT CONSULTING
Divisions of The F.A. Bartlett Tree Expert Company

SHEET TITLE	FOR
PLANTING PLAN DETAIL	**Meydenbauer Residence Bellevue, WA**

SHEET #	SCALE	DATE	PREPARED BY	DRAWN BY
Sheet 1 of 1	**NOT TO SCALE**	04-24-20	**URBAN FORESTRY SERVICES | BARTLETT CONSULTING 15119 McLEAN ROAD MOUNT VERNON, WA 98273**	**HOLLADAY T.P.**

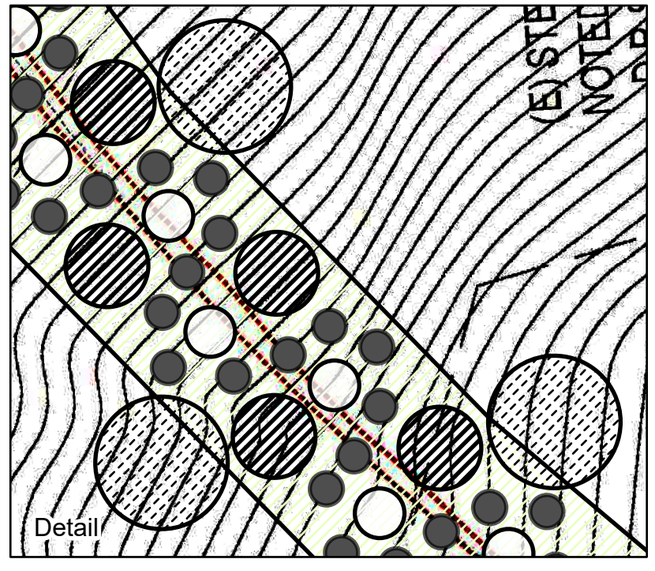
Planting Schedule:

Trees: (alternating)
7 - Big-leaf maple, *Acer macrophyllum*
3 - Douglas fir, *Pseudotsuga menziesii*

Shrubs: (alternating)
16 - Snowberry, *Symphoricarpos albus*
11 - Beaked hazelnut, *Corylus cornuta*

30 - Sword fern, *Polystichum munitum*

108 - Kinnikinnick, *Arctostaphylos uva-ursi*



Urban Forestry Services
BARTLETT CONSULTING
Divisions of The F.A. Bartlett Tree Expert Company

Meydenbauer Residence
707 94th Ave. SE
Site Assessment and Planting Mitigation Plan

Bellevue, WA. 98004

Species Code Description:

Tree identification is comprised of:

1. Tree Number (Example "114")
2. Species Codes (Example "POTR")
3. Diameter (Example "43.6" ")

Example: "114 POTR 43.6"

Species Code:

PSME: Douglas fir *(Pseudotsuga menzeisii)*

Hoshide Wanzer Architects, 2017; City of Bellevue GIS Portal, 2018; UFS|BC - Tyler Holladay, 2020.

Symbols: (Approximate location)

- Critical Root Zone (CRZ)
- Interior Critical Root Zone (ICRZ)
- Disturbance limits
- Steep Slope Critical Areas (Slopes >40%)
- Utilities

April 2020

General Terms for Commercial Consulting Services

The F.A. Bartlett Tree Expert Company ("**Bartlett Tree Experts**") provides tree-care and related consulting services to commercial clients. The agreed upon "Work" has been expressed in a separate Client Agreement between Bartlett Tree Experts and the Client, and is identified within the portion of the Client Agreement communicating the Scope of the Work, the Goals, the Specifications, the Schedule of the Work, and the Payment Terms. These general terms combine with the approved Client Agreement and form the complete agreement between the parties.

Article 1
TREE RISK

1.1 **Tree Risk**

(a) The Client acknowledges that having trees on one's property involves risk, including the risk that a tree or tree limb might fall. As part of the Work, Bartlett Tree Experts may recognize the risk posed by failure of trees within the Scope of Work and recommend to the Client ways to reduce that risk, but the Client acknowledges that Bartlett Tree Experts cannot detect all defects and other conditions that present the risk of tree failure and cannot predict how all trees will respond to future events and circumstances. Trees can fail unpredictably, even if no defects or other conditions are apparent. Bartlett Tree Experts will not be responsible for damages caused by subsequent failure of a tree, or tree part, within or around the Scope of Work due to defects or other preexisting structural or health conditions.

(b) Unless the Work includes having Bartlett Tree Experts perform a tree risk assessment for designated trees, the Client acknowledges that in performing the Work Bartlett Tree Experts is not required to inspect and report to the Client on risks to, and risks posed by, trees on or near the Client's property.

(c) The Client also acknowledges that because trees are living organisms that change over time, the best protection against the risk associated with having trees on the Client's property is for the Client to arrange to have them inspected by a qualified arborist annually and after each major weather event to identify any defects or other conditions that present the risk of tree failure. Then, once inspected, the Client should review any possible defects or conditions that present the risk of failure and request recommendations for, and implement, remedial actions to mitigate the risks.

Article 2
THE WORK

2.1 **Ownership**

The Client states that all trees and other vegetation within the Scope of Work are owned by the Client or that the Owner has authorized the Client to include them within the Scope of Work.

2.2 **Specified Trees or Work**

The specific trees, shrubs, plant materials or work described in the Scope of Work or in the Agreement will be the only trees, shrubs, plant materials, or work included in the scope of the consultative services or Work performed by Bartlett for the Client.

2.3 **Insurance**

(a) Bartlett Tree Experts states that it is insured for liability resulting from injury to persons or damage to property while performing the Work and that its employees are covered under workers' compensation laws.

(b) The scope of ongoing operations of the Work shall be defined as beginning when the performance on the site begins and ending when the performance on the site concludes.

2.4 **Compliance**

Bartlett Tree Experts shall perform the Work competently and in compliance with the law and industry standards, including the American National Standards Institute's A-300 Standards for tree care.

2.5 **Access Over Roads, Driveways, and Walkways**

The Client shall arrange for Bartlett Tree Experts' representatives, vehicles, and equipment to have access during working hours to areas where the Work is to be performed. The Client shall keep roads, driveways, and walkways in those areas clear during working hours for the passage and parking of vehicles and equipment. Unless the Client Agreement states otherwise, Bartlett Tree Experts is not required to keep gates closed for animals or children.

2.6 **Personnel**

Bartlett Tree Experts will determine and provide the correct Bartlett personnel for completing the Work based scope of the project, the expertise needed, and the geographic location of the work, in order to meet the goals of the Client.

2.7 **Accuracy of Information Provided By the Client or By Third Parties Acting on Behalf of the Client**

(a) The Client acknowledges that Bartlett Tree Experts cannot be held responsible for the accuracy of or content of information provided by the Client or third parties acting on behalf of the Client, including but not limited to; the legal description of the property, issues of title and/or ownership of the property, software programs, property and property line locations and/or boundaries, or other pieces of information provided which are integral to the final outcome of the consulting Work.

(b) The Client agrees to correct any errors in any such inaccurate information that it or any third party acting on its behalf, provides Bartlett Tree Experts, once the inaccuracy is known, if such information will be necessary for Bartlett Tree Experts to base its final analysis, management plans, written reports, information or recommendations on for the finalization of the Work.

2.8 **Information Provided By Reliable Sources**

In certain circumstances, Bartlett Tree Experts may need to engage outside reliable sources to provide specialized information, cost estimates, or opinions. Bartlett Tree Experts will make every effort to engage reputable and reliable sources, and will communicate the use of these sources to the Client if such sources are used to help determine an integral part of the Work.

2.9 **Tree Locations, Maps, Sketches, and Diagrams**

The Client acknowledges that Bartlett Tree Experts may use several means and methods to provide tree locations on maps,

sketches, or drawings, and that the use of tree locations on maps, sketches, diagrams, and/or in pictures are intended to aid the Client in understanding the deliverables provided, and may not be to scale and should not be considered precise locations, engineering surveys, or architectural drawings.

2.10 **Global Positioning Systems**

The Client acknowledges that all global positioning system (GPS) devices used to locate trees, shrubs, and plant material, have some accuracy limitations, and regardless of the methodologies or software programs used to enhance the accuracy of the locations, there will always be some level of meter or sub meter locational discrepancies within any deliverable product.

2.11 **Advice, Opinions, Conclusions, and Recommendations**

(a) The Client Acknowledges that all advice, opinions, conclusions, and recommendations provided represent the professional objective opinion(s) of Bartlett Tree Experts; which are in no way predetermined, or biased toward any particular outcome.

(b) The Client acknowledges that all advice, opinions, conclusions, and recommendations provided verbally or in written format such as email, management plans, or reports will be based on the present status of the tree(s), property(s), environmental conditions, and industry standards. Any advice, opinions, conclusions, and recommendations provided do not take into account any future changes in environmental conditions or changes to current industry standards which are unknown and unforeseen at the time the Work is performed.

2.12 **Tree Risk Assessments and Inventories**

(a) If the Client Agreement is specifically for Bartlett Tree Experts to provide a *Level 1 Limited Visual, Level 2 Basic*, or *Level 3 Advanced assessment* of tree risk for any tree or group of trees for the Client in accordance with industry standards, the Client understands that any *risk ratings* and recommendations for mitigating such risks will be based on the observed defects, conditions, and factors at the time of the tree risk assessment or inventory.

(b) The Client acknowledges that any recommendations made to mitigate risk factors will be made in accordance with industry best practices and standards, but that the decision to implement the recommended mitigation or remove the risk factors rests solely with the Client.

(c) The Client understands that all *risk ratings* used are intended to assist the Client with understanding the potential for tree or tree part failure, and are not meant to be used to declare any tree or tree part to be safe or free from any defect. As such, the Client should not infer that any tree not identified as having an *imminent* or *probable likelihood of failure,* or not identified with a *moderate*, *high*, or *extreme risk rating,* or not having a condition rating of *poor* or *dead* is "safe" or will not fail in any manner.

(d) The Client understands that it is the Client's responsibility to ensure that the assessed tree or trees are continually inspected and reassessed periodically, or after any major weather event, in order to ensure that risk rating information is kept current, and to enter any changes to risk ratings or mitigation measures to the inventory or tracking system used by the Client.

2.13 **Tree or Plant Value Appraisals**

(a) The Client acknowledges that tree appraisal is not an exact science. If the Client Agreement is for Bartlett Tree Experts to provide the Client with an appraisal estimate of cost or value, or estimated tree asset value, for specified trees or plant materials, the Client understands that those estimates will be based on a combination of visible conditions at the time of appraisal, information or pictures provided by the Client, local knowledge, information and/or cost estimates provided by local nurseries or plant wholesalers, information and/or costs provided by tree care or landscape installation and maintenance companies, industry best practices, and/or asset value software.

(b) The Client understands that while any such appraisal will be based on one or several accepted industry methods of appraising plant material values, the appraised values provided may or may not be accepted as the final value by third parties, or decision makers in disputes over plant values, such as courts, arbitrators, insurers, or mediation efforts.

2.14 **Local and Tree-Related Permits**

Unless the Client Agreement states differently, the Client is responsible for obtaining and paying for all required local or tree related permits required. If the Work stated in the Client Agreement involves Bartlett Tree Experts submitting for, or assisting the Client in submitting for, any kind of local or tree-related permit, the Client understands that Bartlett Tree Experts cannot guarantee the successful outcome. If Bartlett Tree Experts submits a local or tree permit application on behalf of the Client, the Client must provide all necessary information for Bartlett to make such a submittal, and the Client will be responsible for paying for, or reimbursing Bartlett Tree Experts for, all fees and expenses related to the application process, regardless of the outcome.

2.15 **Expert Witness and Testimony**

The Client acknowledges that unless the Scope of Work in Client Agreement is specifically to perform Expert Witness services and testimony for the Client, then nothing in the Client Agreement will obligate Bartlett Tree Experts to perform Expert Witness services or provide expert testimony for or on behalf of the Client.

2.16 **Environmental Benefits Assessments**

(a) The Client understands that Bartlett Tree Experts may use one or more software, or other programs, developed by other companies or government agencies, which are designed to help provide estimates on the environmental benefits of trees, shrubs, or other plant materials if the Work involves providing an environmental benefit assessment for the Client.

(b) The Client acknowledges that while Bartlett Tree Experts will be responsible for the correct collection and input of data into any such software or other program used to help estimate environmental benefits of trees, shrubs, and other plant materials, the determinations of the data made by any such program may vary based on the method, software, type, year, or version used at any given time. The Client understands that any such method, software, type, year, or version used is meant to provide a sound, scientific method to help the Client understand the environmental benefits of the collected data.

2.17 **Tree and Property Hazards and Safety Issues**

The Client understands that in no way does Bartlett Tree Experts imply, nor should the Client infer that Bartlett Tree

Experts assumes the responsibility for inspecting, identifying, and correcting tree or property hazards or safety issues on or near the Client's property, or conducting tree risk assessments, for which the Client Agreement does not specify, during the course of any of its ongoing consultative or other activities related to this Agreement.

2.18 **Remote Sensing and Tree Canopy Assessments**

(a) If the Work requires Bartlett Tree Experts to evaluate aerial imagery to classify land cover classes, classify random points, or create or manipulate shapefile boundaries, the Client understands that certain factors can prohibit the accuracy of the final Work product, such as; the availability of imagery, files, and shapefiles for the property or site from reliable sources, the accuracy and quality of imagery, files, or shapefiles obtained from reliable sources or provided by the Client, the date of when the imagery, files, or shapefiles were taken or created, and the ability for a person to visually discern the difference between the pixels of aerial imagery.

(b) If such factors inhibit the accuracy of the Work, Bartlett Tree Experts may choose to conduct visual assessments, or use other means, to verify or classify points or imagery into the required specifications. If such alternate methods are used, Bartlett Tree Experts will communicate the use of such methods to the Client in the final work product. If it is not possible or feasible to use alternative methods, then the Client acknowledges that the final work product may have some gaps in accuracy.

2.19 **Use of Drones and Drone-Related Equipment**

(a) If the Work specifies the use of Drones or Drone-related equipment to help collect information, the Client acknowledges that in some cases the use of Drones and Drone-related equipment can provide detailed information, imagery, views, and pictures of a tree(s) or property(s); however, in some cases, not all aspects of a tree(s) or property(s) can be seen or accessed by a Drone. The Client understands that this technology can be limited and should not be used by the Client as the sole decision-making criteria, but rather one of many factors used by the Client in the decision-making process.

(b) The Client agrees that other methods of obtaining the required information must be included in the Client Agreement, and may be required to be utilized, in addition to or separate from the use of Drones or Drone related equipment in the event that the limitations are too severe to perform the required Work.

2.20 **Decay Detection Devices**

(a) The Client acknowledges that all decay detecting devices have limitations, and the use of any such device should be used to supplement information regarding the decay within a tree or trees, and not as the sole source of information.

(b) If the Work requires the use of a decay detection device, unless the Client Agreement specifies the type of device, Bartlett Tree Experts will decide the most appropriate type of decay detecting device to use based on the conditions present and the information needed to supplement and complete the Work.

2.21 **Diagnostic Services**

Bartlett Tree Experts may offer diagnostic services as a means of attempting to isolate certain plant pest or soil problems for the Client, and determining the most logical possibility as to the cause of the condition of the trees, shrubs, or plants in question. The Client understands that in some cases government quarantines may prohibit samples from being sent to a diagnostic clinic, and in some cases, determinations on samples may be inconclusive.

2.22 **Tree Preservation, Tree Protection, and Construction and Site Monitoring**

(a) If the Work includes Bartlett Tree Experts conducting or providing tree preservation or tree protection evaluations, tree impact evaluations, recommendations, specifications, and/or documents required by the governing agency, the Client understands that Bartlett Tree Experts will review the project, materials or plans that are provided by the Client, combined with industry best practices and current tree conditions, to arrive at the recommendations and specifications. The Client also understands that trees are living organisms and that even following all industry best practices and specifications cannot guarantee that a tree will survive construction impacts, which may include but are not limited to soil compaction, root damage, inadequate soil moisture, and decrease in tree stability.

(b) If the Work includes Bartlett Tree Experts conducting or providing tree monitoring during project construction, the Client understands that Bartlett Tree Experts will review the project, materials, or plans that are provided by the Client and/or described by the Client representative at the site, and provide recommendations to the Client to assist with tree preservation or protection, but that the Client will be responsible for ensuring the implementation of such recommendations by the Client or any third parties.

2.23 **Irrigation and Recycled Water Assessments**

(a) If the Work requires Bartlett Tree Experts to provide irrigation or recycled water assessments as a means of aiding the Client with their tree care needs, the assessments will be provided using the best known site conditions, the best available water quality information, or the best available water quality test results provided to Bartlett Tree Experts; however, the Client acknowledges that Bartlett Tree Experts cannot provide information on water source, delivery systems, water chemistry, water quality testing methodology, or distribution systems.

2.24 **Bird, Water Fowl, and Wildlife Habitat Assessments**

If the Work requires Bartlett Tree Experts to provide bird, water fowl, and wildlife habitat assessments or identifications as a means of aiding the Client with their tree care needs and wildlife considerations, the assessments will be based on known site conditions and available industry bird, waterfowl, and wildlife management information.

2.25 **Endangered or Protected Species and Habitats**

(a) If the Work is for Bartlett Tree Experts to identify trees or plant materials that may be endangered or protected species, or to identify trees or plant materials that may be primary or secondary habitat for endangered or protected species, or to provide any analysis for a project that may affect any endangered species or protected species or its habitat, then Bartlett Tree Experts will base all reports and information on the existence of any known endangered or protected species and known habitats using government approved endangered or protected species or habitat information.

(b) The Client acknowledges that Bartlett Tree Experts cannot be responsible for identifying unknown endangered species or habitats.

2.26 **Wetland and Riparian Habitat Mapping**

The Client understands that if the Work involves wetland or riparian habitat mapping, such maps will require the Client to provide the tree or plant species considered to be the primary or secondary habitat for the specific species of animal in question, and such maps will be limited to the species information provided as it overlays within the known designated wetland areas.

2.27 **Representation Services**

If the Work involves a member of Bartlett Tree Experts acting as a representative for, or decision-maker for, the Client, including but not limited to activities such as reviewing, approving or declining tree-related permits, plants, designs, or selections submitted by third parties, then the Client agrees to be the final decision-maker in the event of a third party appeal of an adverse decision or recommendation made by Bartlett Tree Experts with respect to granting or denying a tree related permit, plant, design, or selection submitted by a third party. The Client also agrees to defend Bartlett Tree Experts against any claims made by third parties regarding such decisions or recommendations, and represent the decisions and recommendations of Bartlett Tree Experts, as if such decisions or recommendations were made by the Client.

2.28 **Integrated Pest Management**

(a) If the Work includes consultation for integrated pest management services, the Client understands that the final product may involve recommendations for plant health care treatments that will be tailored to meet the Client's needs for specific trees, shrubs, turf areas, or plants. In creating these recommendations, Bartlett Tree Experts will consider the Client's objectives, priorities, budgetary concerns, plant materials, site conditions, pest and disease infestation levels and the expectations of those levels, and timing issues.

(b) The Client acknowledges that such recommendations may involve one or more inspections of specific plants to help determine insect and disease concerns, the sampling of specific plant materials or soil areas, an understanding of the cultural needs of certain plants, consideration of biological control concepts and limitations (natural and/or introduced predators), recommended improvements to physical site conditions, or the use of pesticide treatments. The integrated pest management service does not combine all possible controls and concepts for every tree, shrub, turf area, or plant, but rather it considers the most reasonable option or options for control of and mitigation of insect and disease damages to the specific trees, shrubs, turf areas or plants as designated by the Client to meet the Client's goals.

(c) The Client understands and acknowledges that during the course of an integrated pest management program, as inspections are taking place, and treatments or other services are being performed to certain trees or shrubs, not every tree or shrub inspected will require a specific treatment or other service, and in fact, some trees or shrubs may not require any specific treatment or other service throughout the course of a season to maintain health and vigor if the inspections show insignificant pest thresholds, and sound environmental and cultural conditions.

(d) The Client also understands that tree, shrub, plant and turf inspections conducted during the integrated pest management program are for the purpose of determining plant health issues and, insect and disease thresholds; and are not conducted for the purposes of determining tree, shrub, plant, or turf safety.

2.29 **Plant Species Selection**

If the Work involves Bartlett Tree Experts providing advice and guidance on plant species selection to aid the Client with their landscape site needs, Bartlett Tree Experts will provide the advice and guidance based on the known site conditions, the available plant species locally at the time, and the plant species characteristics. The Client will be responsible for the planting and maintenance, and ensuring the survival of such plant selections in the landscape.

2.30 **Trees and Subsidence Assessments**

(a) If the Work involves Bartlett Tree Experts providing an assessment of relationship between certain trees or tree parts and the subsidence or movement of a building or structure, the Client understands that certain inferences and assumptions will be made given the location, visibility, soil and drainage conditions, size, species, and condition of the tree or trees, and other factors, in order to perform the Work in the least intrusive manner possible.

(b) Bartlett Tree Experts recommends that the Client reviews any tree related report recommendations, prior to having the work completed, with their structural engineer or other qualified building contractor to help the client determine any potential adverse impact to the buildings or structures.

2.31 **Investigation of Covenants, Easements, Constraints, or Restrictions**

The Client is responsible for investigating and identifying to Bartlett Tree Experts any covenants, easements, constraints, or other restrictions to the title or deed on the property that may adversely impact Bartlett Tree Experts' ability to perform the Work.

2.32 **Cancellation**

If the Client cancels or reduces the Work after the Work has started, the Client shall pay Bartlett Tree Experts for all the items of the Work that have been completed and all reasonable costs Bartlett Tree Experts has incurred in preparing to perform the remainder of the Work.

2.33 **Payment**

The Client shall pay for the Work when the Client receives Bartlett Tree Experts' invoice for the Work, unless specific payment terms have been agreed upon by the parties. If any amount remains unpaid 30 days after the date of the invoice or any period stated in the Client Agreement, whichever is longer, as a service charge the unpaid amount will accrue interest at the rate of 1.5% per month (or 18% per year) or the maximum rate permitted by law, whichever is lower. The Client shall reimburse Bartlett Tree Experts for any expenses (including attorneys' fees and court costs) it incurs in collecting amounts that the Client owes under the Client Agreement.

Article 3
TREE CONDITIONS

3.1 **Cables, Braces and Tree-Support Systems**

The Client acknowledges that cables, braces or tree-support systems are intended to reduce the risk associated with tree part breakage by providing supplemental support to certain areas within trees and in some cases by limiting the

movement of leaders, limbs, or entire trees, and are intended to mitigate the potential damage associated with tree part breakage; but that such supplemental support systems cannot eliminate the risk of breakage or failure to trees or tree parts entirely, and future breakage and damage is still possible

(a) The Client acknowledges that for cables, braces or tree-support systems to function optimally, the Client must arrange for them to be inspected and maintained by a qualified arborist periodically and after each major weather event.

3.2 **Lightning Protection Systems**

(a) The Client acknowledges that lightning protection systems are intended to direct a portion of the electricity from a lightning strike down through the system into the ground, and mitigate the potential damage to the tree from a lightning strike, but that such systems cannot prevent damage to structures, nor can such systems prevent damage to trees caused by lightning entirely.

(b) The Client acknowledges that for lightning protection systems to function optimally, the Client must arrange for them to be inspected and maintained by a qualified arborist periodically and after each major weather event.

3.3 **Recreational Features**

(a) The Client acknowledges that Bartlett Tree Experts recommends stopping the use of, and removing, any tree house, ropes course, swing, or other recreational feature attached to a tree. Regardless of the health or condition of the tree, such features might be unsuited for the intended use or might place unpredictable forces on the feature or the tree, resulting in failure of the feature or the tree and injury to persons or damage to property. Bartlett Tree Experts is not responsible for the consequences of use of any such feature.

(b) The Client acknowledges that if a recommendation is made to mitigate an observed and immediate safety issue on a tree with any such device or feature attached, such as the removal of a dead, dying, or broken limb that could fall and injure a person or damage property, the Client should not infer that following the recommendation and mitigating the immediate safety issue makes the tree in question safe for the use of the attached device or feature.

3.4 **Root Pruning**

In the right circumstances, root pruning is a valuable and necessary service, but it might pose a risk to the health and structural integrity of trees. To limit that risk, Bartlett Tree Experts performs root pruning to industry standards, but the Client acknowledges that the health and structural integrity of trees within the Scope of Work might nevertheless be adversely affected by any root pruning performed as part of the Work. Bartlett Tree Experts shall assist the Client in understanding the risks involved before opting for root pruning, but the Client will be responsible for deciding to proceed with root pruning.

3.5 **Stumps, Stump Grinding, Tree Grates**

The Client acknowledges that if any recommendations call for the removal of certain trees, that the remaining stumps may present tripping hazards, and that it is the Client's responsibility to remove any such tripping hazard, whether such hazard is created by the stump, the grindings if the stump is ground down, or any tree grates that exist.

3.6 **Client Trees in Hazardous Condition**

If the Client Agreement specifies that one or more trees within the Scope of Work are in hazardous condition, have an *extreme*, *high* or *moderate risk rating*, or should be removed for safety reasons, the Client acknowledges that removing those trees would prevent future damage from trees or tree limbs falling. If the Client requests that one or more of those trees be pruned instead of removed, the Client acknowledges that although pruning might reduce the immediate risk of limbs falling, it does not preclude the possibility of future limb, stem, or root failure. Bartlett Tree Experts is not responsible for any such future failure.

3.7 **Trees in Poor Health or a Severe State of Decline**

The Client acknowledges that if a tree is in poor health or in a severe state of decline, Bartlett Tree Experts cannot predict how that tree will respond to any recommended plant health care or soil care and fertilization treatment and might not be able to prevent that tree from getting worse or dying.

3.8 **Trees Planted and Maintained by Other Contractors**

The Client acknowledges that if trees within the Scope of Work were recently planted or are being maintained by one or more other contractors or if one or more other contractors will be watering and providing services with respect to trees within the Scope of Work, how those trees respond to treatment in the course of the Work might be unpredictable, and Bartlett Tree Experts cannot be responsible for the health of such trees or plants.

3.9 **Trees with Cones and Large Seed Pods**

The Client acknowledges that large tree cones or seedpods on some trees can become dislodged and fall without notice, creating a hazard to persons or property. If the Client has the type of tree on their property that produces large, heavy cones or seedpods, and the Client does not wish to remove the tree, Bartlett Tree Experts recommends that the Client marks off and restricts the area under and near the tree from pedestrian and vehicle traffic whenever possible, places a warning sign near the tree, remains aware of the hazardous conditions the falling cones can create, and inspects the tree annually and removes any observable cones if possible in order to mitigate the potential for damage from falling cones.

3.10 **Fire Damage**

(a) Regardless of the species, trees exposed to fire can suffer structural damage that goes beyond whatever external damage might be visible. Fire can cause cracking and brittleness in tree structure and integrity; it can make pre-existing defects worse; it can make roots less stable; and it can weaken the overall health of the tree, making it susceptible to disease and pest infestations. The effects of fire damage are unpredictable and difficult to determine. Bartlett Tree Experts is not responsible for any injury to persons or damage to property resulting from services performed on fire-damaged trees as part of the Work.

(b) The Client acknowledges that if trees and shrubs on the Client's property have been exposed to fire, the Client should have qualified arborist periodically inspect trees and shrubs on the property for fire damage.

Article 4
DISPUTE RESOLUTION

4.1 **Arbitration**

(a) As the exclusive means of initiating adversarial proceedings to resolve any dispute arising out of or related to the Client Agreement or Bartlett Tree Experts' performance of the Work, a party may demand that the dispute be resolved by arbitration administered by the American Arbitration Association in accordance with its commercial arbitration rules, and each party hereby consents to any such dispute being so resolved. Any arbitration commenced in accordance with this section must be conducted by one arbitrator. Judgment on any award rendered in any such arbitration may be entered in any court having jurisdiction. The parties also agree that the issue of whether any such dispute is arbitrable will be decided by an arbitrator, not a court.

(b) The arbitrator must not award punitive damages in excess of compensatory damages. Each party hereby waives any right to recover any such damages in any arbitration.

4.2 **Third Party Liability**

The Client acknowledges that the use of any management plans created, reports written, recommendations, maps, sketches, and conclusions made are for the Client's use and are not intended to benefit or cause damage to any third party. Bartlett Tree Experts accepts no responsibility for any damages or losses suffered by any third party or by the Client as a result of decisions made or actions based upon the use of reliance of the management plans created, reports written, recommendations, maps, sketches, and conclusions made by any third party.

4.3 **Limitation of Liability**

The maximum liability of Bartlett Tree Experts for any losses incurred by the Client arising out of the Client Agreement or Bartlett Tree Experts' performance of the Work will be the amount paid by the Client for the Work, except in the case of negligence or intentional misconduct by Bartlett Tree Experts.

Article 5
MISCELLANEOUS

5.1 **Client Responsibilities**

(a) The Client is responsible for the maintenance of the Client's trees, shrubs, and turf and for all decisions as to whether or not to prune, remove, or conduct other types of tree work on each respective tree, or when to prune, remove, or conduct other tree work on any respective tree, and all decisions related to the safety of each respective tree, shrub, and turf area.

(b) Nothing in this Agreement creates an ongoing duty of care for Bartlett Tree Experts to provide safety maintenance or safety inspections in and around the Client's property. It is the responsibility of the Client to ensure the safety of its trees and landscape, and to take appropriate actions to prevent any future tree or tree part breakage or failures, or otherwise remove any hazardous conditions which may be present or may develop in the future.

5.2 **Severability**

If any portion of this Client Agreement is found to be unenforceable, then only that portion will be stricken from the Client Agreement, and the remainder of the Client Agreement will remain enforceable.

5.3 **Unrelated Court Proceedings**

The Client acknowledges that Bartlett Tree Experts has prepared the Client Agreement solely to help the Client understand the Scope of Work and the related costs. If a court subpoenas Bartlett Tree Experts' records regarding, or requires that a Bartlett representative testify about, the Client Agreement or the Work in connection with any Proceeding to which Bartlett Tree Experts is not a party or in connection with which Bartlett Tree Experts has not agreed to provide expert testimony, the Client shall pay Bartlett Tree Experts Two Hundred Dollars ($200.00) per hour for time spent by Bartlett representatives in collecting and submitting documents for those Proceedings and attending depositions or testifying as part of those Proceedings.

5.4 **Use of Information**

The Client acknowledges that the information provided within the Client Agreement and any deliverables provided is solely for the use of the Client for the intended purpose of helping the Client understand and manage their tree care needs. All deliverables must be used as a whole, and not separated or used separately for other purposes.

5.5 **Notices**

For a notice or other communication under the Client Agreement to be valid, it must be in writing and delivered (1) by hand, (2) by a national transportation company (with all fees prepaid), or (3) by email. If a notice or other communication addressed to a party is received after 5:00 p.m. on a business day at the location specified for that party, or on a day that is not a business day, then the notice will be deemed received at 9:00 a.m. on the next business day.

4.4 **Amendment; Waiver**

No amendment of the Client Agreement will be effective unless it is in writing and signed by the parties. No waiver under the Client Agreement will be effective unless it is in writing and signed by the party granting the waiver. A waiver granted on one occasion will not operate as a waiver on other occasions.

5.5 **Conflicting Terms**

If these terms conflict with the rest of the Client Agreement, the rest of the Client Agreement will prevail. If these terms conflict with any other Client documentation, terms, or purchase order agreement, then the Client Agreement and these terms will prevail.

5.6 **Entire Agreement**

The Client Agreement with these terms constitutes the entire understanding between the parties regarding Bartlett Tree Experts' performance of the Work and supersedes all other agreements, whether written or oral, between the parties.

ATTACHMENT B

GEOTECH
CONSULTANTS, INC.

2401 10th Ave E
Seattle, Washington 98102
(425) 747-5618 FAX (425) 747-8561

May 11, 2017

JN 17132

Hans Spiller
707 – 94th Avenue Southeast
Bellevue, Washington 98004

via email: hanss@exmsft.com

Subject: **Transmittal Letter – Geotechnical Engineering Study**
Proposed Single-Family Residence
707 – 94th Avenue Southeast
Bellevue, Washington

Dear Mr. Spiller:

We are pleased to present this geotechnical engineering report for the single-family residence to be constructed in Bellevue, Washington. The scope of our services consisted of exploring site surface and subsurface conditions, and then developing this report to provide recommendations for general earthwork and design criteria for foundations and retaining walls.

The attached report contains a discussion of the study and our recommendations. Please contact us if there are any questions regarding this report, or for further assistance during the design and construction phases of this project.

Respectfully submitted,

GEOTECH CONSULTANTS, INC.

D. Robert Ward, P.E.
Principal

cc: **Hoshide Wanzer Architects** - Yuko Kunugi
via email: yuko@hw-architects.com

DRW:mw

GEOTECHNICAL ENGINEERING STUDY
Proposed Single-Family Residence
707 – 94th Avenue Southeast
Bellevue, Washington

This report presents the findings and recommendations of our geotechnical engineering study for the site of the proposed single-family residence to be located in Bellevue.

We have been provided with a topographic survey of the site by DR Strong Consulting Engineers dated July 19, 2014. Recently, we were provided with new architectural site plan and civil drainage plan of the project. Based on the architectural plan, we understand that the existing site structures (including a house) will be removed and a new residence will be constructed slightly east of the existing house. The proposed residence will be located in an area that is flat to moderately sloping. The residence will basement that will daylight toward the west; there is a gentle to moderate slope in the new residence area that the residence will follow. The civil plans indicated that stormwater from the project will be collected and then ultimately discharge into an existing stormwater system north of the project area.

A steep slope is located on the western portion of the property. The plans indicate that the new structures of the residence (the residence itself, patios, decks) will be located at close as 10 feet from steep slope, although most of the structures will be located much further than 10 feet.

If the scope of the project changes from what we have described above, we should be provided with revised plans in order to determine if modifications to the recommendations and conclusions of this report are warranted.

SITE CONDITIONS

SURFACE

The Vicinity Map, Plate 1, illustrates the general location of the irregularly-shaped site in the Meydenbauer area of Bellevue. The site is surrounded by single-family residences and covers approximately 3.8 acres. An existing house is located in the south central portion of the site, and is connected to a nearby carport by a breezeway. The carport is accessed by an asphalt driveway that enters the site at its northeast and southeast corners. A second carport is located in the east central part of the site, and two detached sheds are located southeast of the house.

Overall, the ground surface within the site slopes down toward the west. The eastern and central portions of the site are flat to moderately sloping. However, the western portion of the site slopes steeply to very steeply down to the west. There is a change in elevation of up to about 150 feet across the approximately 400-foot width of the site although most of this change is within the steep slope. It appears that the relatively-level lawn area northeast of the existing house has been flattened by previous grading. The upper end of a ravine is located at the west edge of this lawn, and four tiered timber retaining walls with a total height of 14 feet are located between the ravine and the lawn. It is apparent that fill has been placed in the upper end of the ravine, and is faced by the tiered timber walls, as confirmed by a test pit as described below. Based on its topography and close proximity, it appears likely that the fill originated at the east end of the gently sloping lawn.

We did not observe indications of instability of the slopes within the site, and are not aware of landslides at the site. The site is vegetated with grass lawns, landscaping bushes, and young to mature evergreen and deciduous trees. The western slope is more heavily vegetated than the rest of the site.

SUBSURFACE

The subsurface conditions were explored by excavating six test pits at the approximate locations shown on the Site Exploration Plan, Plate 2. Our exploration program was based on the proposed construction, anticipated subsurface conditions and those encountered during exploration, and the scope of work outlined in our proposal.

The test pits were excavated on October 23, 2014 with a rubber-tracked excavator. A geotechnical engineer from our staff observed the excavation process, logged the test pits, and obtained representative samples of the soil encountered. "Grab" samples of selected subsurface soil were collected from the excavator bucket. The Test Pit Logs are attached to this report as Plates 3 through 5.

Soil Conditions

The test pits generally encountered topsoil at the ground surface that was about one foot thick. In Test Pits 3 through 6, the topsoil was underlain by loose to medium-dense silty sand that extended to depths of about 2.5 feet before medium-dense material was encountered. The loose to medium-dense soil in these test pits, and the topsoil in Test Pit 1, was underlain by layers of medium-dense to dense silt to silty sand. These materials extended to the base of the explorations at depths of 5.5 to 9 feet.

Test Pit 2, located upslope of the four tiered timber retaining walls, encountered loose to medium-dense fill that consisted of silty sand and silt with sand and trace organics. It is apparent that the walls were built to support the fill. The fill extended to a depth of 4 feet and was underlain by a foot of buried topsoil. Below the topsoil, we observed medium-dense to dense silty sand that extended to the base of the test pit at a depth of 8.5 feet.

Groundwater Conditions

Perched groundwater seepage was observed at depths of 1 to 5.5 feet in three of the test pits. The test pits were left open for only a short time period. Therefore, the seepage levels on the logs represent the location of transient water seepage and may not indicate the static groundwater level. It should be noted that groundwater levels vary seasonally with rainfall and other factors. It is very likely that groundwater could be found between the near-surface soil and the underlying denser and/or silty soil, especially during the normally wet winter and spring months.

The stratification lines on the logs represent the approximate boundaries between soil types at the exploration locations. The actual transition between soil types may be gradual, and subsurface conditions can vary between exploration locations. The logs provide specific subsurface information only at the locations tested. The relative densities and moisture descriptions indicated on the test pit logs are interpretive descriptions based on the conditions observed during excavation.

The compaction of test pit backfill was not in the scope of our services. Loose soil will therefore be found in the area of the test pits. If this presents a problem, the backfill will need to be removed and replaced with structural fill during construction.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

THIS SECTION CONTAINS A SUMMARY OF OUR STUDY AND FINDINGS FOR THE PURPOSES OF A GENERAL OVERVIEW ONLY. MORE SPECIFIC RECOMMENDATIONS AND CONCLUSIONS ARE CONTAINED IN THE REMAINDER OF THIS REPORT. ANY PARTY RELYING ON THIS REPORT SHOULD READ THE ENTIRE DOCUMENT.

The test pits conducted for this study generally encountered medium-dense or denser native soils within a few feet of the ground surface. These competent soils are well-suited to supporting the proposed residence; conventional footings that bear on these competent soils can be used as the residence foundation. However, Test Pit 2, apparently located west of the proposed residence, encountered fill and buried topsoil that extended about 6 feet below the ground surface. This fill appears to have been placed in a ravine with a roughly east-west alignment. We anticipate that the fill thickness decreases toward the east and south, but a small amount of fill may exist at the northwest corner of the planned residence. Some over-excavation may be needed to reach the competent soil in this area.

The native soils have a substantial fines (silt) content, and they can be easily disturbed during wet weather. Unless the residence foundation subgrade is prepared during the dry summer months, a protective layer of a few inches of crushed rock will likely be needed over the footing subgrade to protect the subgrade from disturbance.

As noted earlier in this report, a steep slope is located on the western portion of the property. A discussion of the development in relation to the steep slope is discussed in a subsequent section of this report. We believe that the proposed location of the residence is very suitable from a geotechnical engineering standpoint. However, it is important that no fill soils be placed on or near the steep slope without it being property retained with engineered structures, and also no stormwater should be directed to the slope. The plans we reviewed indicate that this will be the case.

The erosion control measures needed during the site development will depend heavily on the weather conditions that are encountered. We anticipate that a silt fence will be needed around the downslope sides of any cleared areas. Existing pavements, ground cover, and landscaping should be left in place wherever possible to minimize the amount of exposed soil. Rocked staging areas and construction access roads should be provided to reduce the amount of soil or mud carried off the property by trucks and equipment. Wherever possible, the access roads should follow the alignment of planned pavements. Trucks should not be allowed to drive off of the rock-covered areas. Cut slopes and soil stockpiles should be covered with plastic during wet weather. Following clearing or rough grading, it may be necessary to mulch or hydroseed bare areas that will not be immediately covered with landscaping or an impervious surface. On most construction projects, it is necessary to periodically maintain or modify temporary erosion control measures to address specific site and weather conditions.

The drainage and/or waterproofing recommendations presented in this report are intended only to prevent active seepage from flowing through concrete walls or slabs. Even in the absence of active seepage into and beneath structures, water vapor can migrate through walls, slabs, and floors from the surrounding soil, and can even be transmitted from slabs and foundation walls due to the concrete curing process. Water vapor also results from occupant uses, such as cooking and bathing. Excessive water vapor trapped within structures can result in a variety of undesirable conditions, including, but not limited to, moisture problems with flooring systems, excessively moist air within occupied areas, and the growth of molds, fungi, and other biological organisms that may be harmful to the health of the occupants. The designer or architect must consider the potential vapor sources and likely occupant uses, and provide sufficient ventilation, either passive or mechanical, to prevent a build up of excessive water vapor within the planned structure.

Geotech Consultants, Inc. should be allowed to review the final development plans to verify that the recommendations presented in this report are adequately addressed in the design. Such a plan review would be additional work beyond the current scope of work for this study, and it may include revisions to our recommendations to accommodate site, development, and geotechnical constraints that become more evident during the review process.

We recommend including this report, in its entirety, in the project contract documents. This report should also be provided to any future property owners so they will be aware of our findings and recommendations.

STEEP SLOPE CONSIDERATIONS

The City of Bellevue Land Use Code (Chapter 20 of the Bellevue City Code), defines Geologic Hazard Areas in section 20.25H.120. Specifically, a Steep Slope is defined as a slope of 40 percent or more that has a rise of at least 10 feet and exceeds 1,000 square feet in area. Under this definition, the slope on the lower, western portion of the site is classified as a Steep Slope.

The City defines a Landslide Hazard Area as any slope inclined at 15 percent or steeper that exhibits: a) areas of historic landsliding; b) soil movements within the Holocene Epoch (13,000 years ago to present); c) slopes that are parallel to sub-parallel to subsurface planes of weakness; d) slopes with geomorphic features indicating past historic movements; e) areas with spring seeps that indicate a shallow groundwater table on or adjacent to the slope face; and f) areas of potential instability from wave cutting, rapid stream incision, or stream bank erosion. We did not observe any signs of past or potential deep-seated landslide movements on this site. Although we observed seepage upslope of the steep slope area in the lower, eastern portion of the site, we did not observe other City-defined landslide criteria on the slopes of this property. Based on our observations, and the information available from our test pits, the steep slope should not classify as a Landslide Hazard under this section of the City Code.

The Bellevue code includes development restrictions for Geologic Hazard Areas, including a 50-foot buffer drawn from the top of a Steep Slope where no development shall occur. However, Section 20.25H.125 states that development within the Steep Slope buffer may be allowed if all the provisions of this section are met, which identifies performance standards for development in steep slope areas and buffers. Because the core soil at the site is medium-dense to dense, glacially-consolidated soil, and provided that the residence project is constructed as recommended in this report, it is our opinion that constructing the proposed residence at the site, which will in some small areas be located in some areas as close as 10 feet from the steep slope, will not adversely

affect the overall stability of the existing slope and thus meets the provisions of Section 20.25.125 in our opinion.

SEISMIC CONSIDERATIONS

In accordance with the International Building Code (IBC), the site class within 100 feet of the ground surface is best represented by Site Class Type D (Stiff Site Class). The site soils are not susceptible to seismic liquefaction because of their medium-dense to dense nature and/or the lack of a near-surface water table.

CONVENTIONAL FOUNDATIONS

The proposed structure can be supported on conventional continuous and spread footings bearing on undisturbed, medium-dense, native soil. We recommend that continuous and individual spread footings have minimum widths of 12 and 16 inches, respectively. Exterior footings should also be bottomed at least 18 inches below the lowest adjacent finish ground surface for protection against frost and erosion. The local building codes should be reviewed to determine if different footing widths or embedment depths are required. Footing subgrades must be cleaned of loose or disturbed soil prior to pouring concrete. Depending upon site and equipment constraints, this may require removing the disturbed soil by hand.

An allowable bearing pressure of 2,500 pounds per square foot (psf) is appropriate for footings supported on competent native soil. A one-third increase in this design bearing pressure may be used when considering short-term wind or seismic loads. For the above design criteria, it is anticipated that the total post-construction settlement of footings founded on competent native soil will be about 3/4-inch, with differential settlements on the order of one-half-inch in a distance of 50 feet along a continuous footing with a uniform load.

Lateral loads due to wind or seismic forces may be resisted by friction between the foundation and the bearing soil, or by passive earth pressure acting on the vertical, embedded portions of the foundation. For the latter condition, the foundation must be either poured directly against relatively level, undisturbed soil or be surrounded by level, well-compacted fill. We recommend using the following ultimate values for the foundation's resistance to lateral loading:

PARAMETER	ULTIMATE VALUE
Coefficient of Friction	0.45
Passive Earth Pressure	300 pcf

Where: pcf is Pounds per Cubic Foot, and Passive Earth Pressure is computed using the equivalent fluid density.

If the ground in front of a foundation is loose or sloping, the passive earth pressure given above will not be appropriate. We recommend maintaining a safety factor of at least 1.5 for the foundation's resistance to lateral loading, when using the above ultimate values.

FOUNDATION AND RETAINING WALLS

Retaining walls backfilled on only one side should be designed to resist the lateral earth pressures imposed by the soil they retain. The following recommended parameters are for walls that restrain level backfill:

PARAMETER	VALUE
Active Earth Pressure *	35 pcf
Passive Earth Pressure	300 pcf
Coefficient of Friction	0.45
Soil Unit Weight	130 pcf

Where: pcf is Pounds per Cubic Foot, and Active and Passive Earth Pressures are computed using the equivalent fluid pressures.

*** For a restrained wall that cannot deflect at least 0.002 times its height, a uniform lateral pressure equal to 10 psf times the height of the wall should be added to the above active equivalent fluid pressure.**

The design values given above do not include the effects of any hydrostatic pressures behind the walls and assume that no surcharges, such as those caused by slopes, vehicles, or adjacent foundations will be exerted on the walls. If these conditions exist, those pressures should be added to the above lateral soil pressures. Where sloping backfill is desired behind the walls, we will need to be given the wall dimensions and the slope of the backfill in order to provide the appropriate design earth pressures. The surcharge due to traffic loads behind a wall can typically be accounted for by adding a uniform pressure equal to 2 feet multiplied by the above active fluid density. Heavy construction equipment should not be operated behind retaining and foundation walls within a distance equal to the height of a wall, unless the walls are designed for the additional lateral pressures resulting from the equipment.

The values given above are to be used to design only permanent foundation and retaining walls that are to be backfilled, such as conventional walls constructed of reinforced concrete or masonry. It is not appropriate to use the above earth pressures and soil unit weight to back-calculate soil strength parameters for design of other types of retaining walls, such as soldier pile, reinforced earth, modular or soil nail walls. We can assist with design of these types of walls, if desired. The passive pressure given is appropriate only for a shear key poured directly against undisturbed native soil, or for the depth of level, well-compacted fill placed in front of a retaining or foundation wall. The values for friction and passive resistance are ultimate values and do not include a safety factor. We recommend a safety factor of at least 1.5 for overturning and sliding, when using the above values to design the walls. Restrained wall soil parameters should be utilized for a distance of 1.5 times the wall height from corners or bends in the walls. This is intended to reduce the amount of cracking that can occur where a wall is restrained by a corner.

Wall Pressures Due to Seismic Forces

The surcharge wall loads that could be imposed by the design earthquake can be modeled by adding a uniform lateral pressure to the above-recommended active pressure. The recommended surcharge pressure is 7**H** pounds per square foot (psf), where **H** is the

design retention height of the wall. Using this increased pressure, the safety factor against sliding and overturning can be reduced to 1.2 for the seismic analysis.

Retaining Wall Backfill and Waterproofing

Backfill placed behind retaining or foundation walls should be coarse, free-draining structural fill containing no organics. This backfill should contain no more than 5 percent silt or clay particles and have no gravel greater than 4 inches in diameter. The percentage of particles passing the No. 4 sieve should be between 25 and 70 percent. If the native sand soils are used as backfill, a minimum 12-inch width of free-draining gravel or a drainage composite similar to Miradrain 6000 should be placed against the backfilled retaining walls. The on-site silt soil should not be used as wall backfill. The drainage composites should be hydraulically connected to the foundation drain system. For increased protection, drainage composites should be placed along cut slope faces, and the walls should be backfilled entirely with free-draining soil. The later section entitled ***Drainage Considerations*** should also be reviewed for recommendations related to subsurface drainage behind foundation and retaining walls.

The purpose of these backfill requirements is to ensure that the design criteria for a retaining wall are not exceeded because of a build-up of hydrostatic pressure behind the wall. Also, subsurface drainage systems are not intended to handle large volumes of water from surface runoff. The top 12 to 18 inches of the backfill should consist of a compacted, relatively impermeable soil or topsoil, or the surface should be paved. The ground surface must also slope away from backfilled walls to reduce the potential for surface water to percolate into the backfill. Water percolating through pervious surfaces (pavers, gravel, permeable pavement, etc.) must also be prevented from flowing toward walls or into the backfill zone. The compacted subgrade below pervious surfaces and any associated drainage layer should therefore be sloped away. Alternatively, a membrane and subsurface collection system could be provided below a pervious surface.

It is critical that the wall backfill be placed in lifts and be properly compacted, in order for the above-recommended design earth pressures to be appropriate. The wall design criteria assume that the backfill will be well-compacted in lifts no thicker than 12 inches. The compaction of backfill near the walls should be accomplished with hand-operated equipment to prevent the walls from being overloaded by the higher soil forces that occur during compaction. The section entitled ***General Earthwork and Structural Fill*** contains additional recommendations regarding the placement and compaction of structural fill behind retaining and foundation walls.

The above recommendations are not intended to waterproof below-grade walls, or to prevent the formation of mold, mildew or fungi in interior spaces. Over time, the performance of subsurface drainage systems can degrade, subsurface groundwater flow patterns can change, and utilities can break or develop leaks. Therefore, waterproofing should be provided where future seepage through the walls is not acceptable. This typically includes limiting cold-joints and wall penetrations, and using bentonite panels or membranes on the outside of the walls. There are a variety of different waterproofing materials and systems, which should be installed by an experienced contractor familiar with the anticipated construction and subsurface conditions. Applying a thin coat of asphalt emulsion to the outside face of a wall is not considered waterproofing, and will only help to reduce moisture generated from water vapor or capillary action from seeping through the concrete. As with any project, adequate ventilation of basement and crawl space areas is

important to prevent a build up of water vapor that is commonly transmitted through concrete walls from the surrounding soil, even when seepage is not present. This is appropriate even when waterproofing is applied to the outside of foundation and retaining walls. We recommend that you contact an experienced envelope consultant if detailed recommendations or specifications related to waterproofing design, or minimizing the potential for infestations of mold and mildew are desired.

The ***General***, ***Slabs-On-Grade***, and ***Drainage Considerations*** sections should be reviewed for additional recommendations related to the control of groundwater and excess water vapor for the anticipated construction.

SLABS-ON-GRADE

The building floors can be constructed as slabs-on-grade atop competent native soil or on structural fill. The subgrade soil must be in a firm, non-yielding condition at the time of slab construction or underslab fill placement. Any soft areas encountered should be excavated and replaced with select, imported structural fill.

Even where the exposed soils appear dry, water vapor will tend to naturally migrate upward through the soil to the new constructed space above it. This can affect moisture-sensitive flooring, cause imperfections or damage to the slab, or simply allow excessive water vapor into the space above the slab. All interior slabs-on-grade should be underlain by a capillary break drainage layer consisting of a minimum 4-inch thickness of clean gravel or crushed rock that has a fines content (percent passing the No. 200 sieve) of less than 3 percent and a sand content (percent passing the No. 4 sieve) of no more than 10 percent. Pea gravel or crushed rock are typically used for this layer.

As noted by the American Concrete Institute (ACI) in the *Guides for Concrete Floor and Slab Structures,* proper moisture protection is desirable immediately below any on-grade slab that will be covered by tile, wood, carpet, impermeable floor coverings, or any moisture-sensitive equipment or products. ACI also notes that vapor *retarders* such as 6-mil plastic sheeting have been used in the past, but are now recommending a minimum 10-mil thickness for better durability and long term performance. A vapor retarder is defined as a material with a permeance of less than 0.3 perms, as determined by ASTM E 96. It is possible that concrete admixtures may meet this specification, although the manufacturers of the admixtures should be consulted. Where vapor retarders are used under slabs, their edges should overlap by at least 6 inches and be sealed with adhesive tape. The sheeting should extend to the foundation walls for maximum vapor protection. If no potential for vapor passage through the slab is desired, a vapor *barrier* should be used. A vapor barrier, as defined by ACI, is a product with a water transmission rate of 0.01 perms when tested in accordance with ASTM E 96. Reinforced membranes having sealed overlaps can meet this requirement.

In the recent past, ACI (Section 4.1.5) recommended that a minimum of 4 inches of well-graded compactable granular material, such as a 5/8-inch-minus crushed rock pavement base, be placed over the vapor retarder or barrier for their protection, and as a "blotter" to aid in the curing of the concrete slab. Sand was not recommended by ACI for this purpose. However, the use of material over the vapor retarder is controversial as noted in current ACI literature because of the potential that the protection/blotter material can become wet between the time of its placement and the installation of the slab. If the material is wet prior to slab placement, which is always possible in the Puget Sound area, it could cause vapor transmission to occur up through the slab in the future,

essentially destroying the purpose of the vapor barrier/retarder. Therefore, if there is a potential that the protection/blotter material will become wet before the slab is installed, ACI now recommends that no protection/blotter material be used. However, ACI then recommends that, because there is a potential for slab curl due to the loss of the blotter material, joint spacing in the slab be reduced, a low shrinkage concrete mixture be used, and "other measures" (steel reinforcing, etc.) be used. ASTM E-1643-98 "Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs" generally agrees with the recent ACI literature.

We recommend that the contractor, the project materials engineer, and the owner discuss these issues and review recent ACI literature and ASTM E-1643 for installation guidelines and guidance on the use of the protection/blotter material.

The ***General***, ***Permanent Foundation and Retaining Walls***, and ***Drainage Considerations*** sections should be reviewed for additional recommendations related to the control of groundwater and excess water vapor for the anticipated construction.

EXCAVATIONS AND SLOPES

Excavation slopes should not exceed the limits specified in local, state, and national government safety regulations. Temporary cuts to a depth of about 4 feet may be attempted vertically in unsaturated soil, if there are no indications of slope instability. However, vertical cuts should not be made near property boundaries, or existing utilities and structures. Based upon Washington Administrative Code (WAC) 296, Part N, the soil at the subject site would generally be classified as Type B. Therefore, temporary cut slopes greater than 4 feet in height should not be excavated at an inclination steeper than 1:1 (Horizontal:Vertical), extending continuously between the top and the bottom of a cut.

The above-recommended temporary slope inclination is based on the conditions exposed in our explorations, and on what has been successful at other sites with similar soil conditions. It is possible that variations in soil and groundwater conditions will require modifications to the inclination at which temporary slopes can stand. Temporary cuts are those that will remain unsupported for a relatively short duration to allow for the construction of foundations, retaining walls, or utilities. Temporary cut slopes should be protected with plastic sheeting during wet weather. It is also important that surface runoff be directed away from the top of temporary slope cuts. Cut slopes should also be backfilled or retained as soon as possible to reduce the potential for instability. Please note that sand or loose soil can cave suddenly and without warning. Excavation, foundation, and utility contractors should be made especially aware of this potential danger. These recommendations may need to be modified if the area near the potential cuts has been disturbed in the past by utility installation, or if settlement-sensitive utilities are located nearby.

All permanent cuts into native soil should be inclined no steeper than 2:1 (H:V). Compacted fill slopes should also not be constructed with an inclination steeper than 2:1 (H:V). To reduce the potential for shallow sloughing, fill must be compacted to the face of these slopes. This can be accomplished by overbuilding the compacted fill and then trimming it back to its final inclination. Adequate compaction of the slope face is important for long-term stability and is necessary to prevent excessive settlement of patios, slabs, foundations, or other improvements that may be placed near the edge of the slope.

Water should not be allowed to flow uncontrolled over the top of any temporary or permanent slope. All permanently exposed slopes should be seeded with an appropriate species of vegetation to reduce erosion and improve the stability of the surficial layer of soil.

Any disturbance to the existing slope outside of the building limits may reduce the stability of the slope. Damage to the existing vegetation and ground should be minimized, and any disturbed areas should be revegetated as soon as possible. Soil from the excavation should not be placed on the slope, and this may require the off-site disposal of any surplus soil.

DRAINAGE CONSIDERATIONS

Footing drains should be used where (1) crawl spaces or basements will be below a structure, (2) a slab is below the outside grade, or (3) the outside grade does not slope downward from a building. Drains should also be placed at the base of all earth-retaining walls. These drains should be surrounded by at least 6 inches of 1-inch-minus, washed rock that is encircled with non-woven, geotextile filter fabric (Mirafi 140N, Supac 4NP, or similar material). At its highest point, a perforated pipe invert should be at least 6 inches below the bottom of a slab floor or the level of a crawl space. The discharge pipe for subsurface drains should be sloped for flow to the outlet point. Roof and surface water drains must not discharge into the foundation drain system. A typical drain detail is attached to this report as Plate 6. For the best long-term performance, perforated PVC pipe is recommended for all subsurface drains.

As a minimum, a vapor retarder, as defined in the ***Slabs-On-Grade*** section, should be provided in any crawl space area to limit the transmission of water vapor from the underlying soils. Crawl space grades are sometimes left near the elevation of the bottom of the footings. As a result, an outlet drain is recommended for all crawl spaces to prevent an accumulation of any water that may bypass the footing drains. Providing even a few inches of free draining gravel underneath the vapor retarder limits the potential for seepage to build up on top of the vapor retarder.

Groundwater was observed during our field work. If seepage is encountered in an excavation, it should be drained from the site by directing it through drainage ditches, perforated pipe, or French drains, or by pumping it from sumps interconnected by shallow connector trenches at the bottom of the excavation.

The excavation and site should be graded so that surface water is directed off the site and away from the tops of slopes. Water should not be allowed to stand in any area where foundations, slabs, or pavements are to be constructed. Final site grading in areas adjacent to a building should slope away at least 2 percent, except where the area is paved. Surface drains should be provided where necessary to prevent ponding of water behind foundation or retaining walls. A discussion of grading and drainage related to pervious surfaces near walls and structures is contained in the ***Foundation and Retaining Walls*** section. Water from roof, storm water, and foundation drains should not be discharged onto slopes; it should be tightlined to a suitable outfall located away from any slopes.

GENERAL EARTHWORK AND STRUCTURAL FILL

All building and pavement areas should be stripped of surface vegetation, topsoil, organic soil, and other deleterious material. It is important that existing foundations be removed before site development. The stripped or removed materials should not be mixed with any materials to be used as structural fill, but they could be used in non-structural areas, such as landscape beds.

Structural fill is defined as any fill, including utility backfill, placed under, or close to, a building, behind permanent retaining or foundation walls, or in other areas where the underlying soil needs to support loads. All structural fill should be placed in horizontal lifts with a moisture content at, or near, the optimum moisture content. The optimum moisture content is that moisture content that results in the greatest compacted dry density. The moisture content of fill is very important and must be closely controlled during the filling and compaction process.

The allowable thickness of the fill lift will depend on the material type selected, the compaction equipment used, and the number of passes made to compact the lift. The loose lift thickness should not exceed 12 inches. We recommend testing the fill as it is placed. If the fill is not sufficiently compacted, it can be recompacted before another lift is placed. This eliminates the need to remove the fill to achieve the required compaction. The following table presents recommended relative compactions for structural fill:

LOCATION OF FILL PLACEMENT	MINIMUM RELATIVE COMPACTION
Beneath footings, slabs or walkways	95%
Filled slopes and behind retaining walls	90%
Beneath pavements	95% for upper 12 inches of subgrade; 90% below that level

Where: Minimum Relative Compaction is the ratio, expressed in percentages, of the compacted dry density to the maximum dry density, as determined in accordance with ASTM Test Designation D 1557-91 (Modified Proctor).

Structural fill that will be placed in wet weather should consist of a coarse, granular soil with a silt or clay content of no more than 5 percent. The percentage of particles passing the No. 200 sieve should be measured from that portion of soil passing the three-quarter-inch sieve.

LIMITATIONS

The conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our exploration and assume that the soil and groundwater conditions encountered in the test pits are representative of subsurface conditions on the site. If the subsurface conditions encountered during construction are significantly different from those observed in our explorations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. Unanticipated conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking samples in test

pits. Subsurface conditions can also vary between exploration locations. Such unexpected conditions frequently require making additional expenditures to attain a properly constructed project. It is recommended that the owner consider providing a contingency fund to accommodate such potential extra costs and risks. This is a standard recommendation for all projects.

The recommendations presented in this report are directed toward the protection of only the proposed structure from damage due to slope movement. Predicting the future behavior of steep slopes and the potential effects of development on their stability is an inexact and imperfect science that is currently based mostly on the past behavior of slopes with similar characteristics. Landslides and soil movement can occur on steep slopes before, during, or after the development of property. At additional cost, we can provide recommendations for reducing the risk of future movement on the steep slopes, which could involve regrading the slopes or installing subsurface drains or costly retaining structures. The owner of any property containing, or located close to steep slopes must ultimately accept the possibility that some slope movement could occur. However, based on a buffer of at least 30 feet, such movement will not affect the proposed residence.

This report has been prepared for the exclusive use of Tony Prophet and his representatives for specific application to this project and site. Our conclusions and recommendations are professional opinions derived in accordance with our understanding of current local standards of practice, and within the scope of our services. No warranty is expressed or implied. The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design. Our services also do not include assessing or minimizing the potential for biological hazards, such as mold, bacteria, mildew and fungi in either the existing or proposed site development.

ADDITIONAL SERVICES

Geotech Consultants, Inc. should be retained to provide geotechnical consultation, testing, and observation services during construction. This is to confirm that subsurface conditions are consistent with those indicated by our exploration, to evaluate whether earthwork and foundation construction activities comply with the general intent of the recommendations presented in this report, and to provide suggestions for design changes in the event subsurface conditions differ from those anticipated prior to the start of construction. However, our work would not include the supervision or direction of the actual work of the contractor and its employees or agents. Also, job and site safety, and dimensional measurements, will be the responsibility of the contractor.

During the construction phase, we will provide geotechnical observation and testing services when requested by you or your representatives. Please be aware that we can only document site work we actually observe. It is still the responsibility of your contractor or on-site construction team to verify that our recommendations are being followed, whether we are present at the site or not.

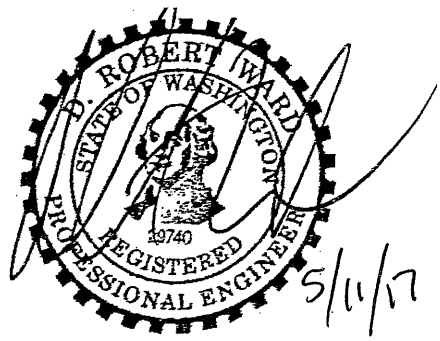
The following plates are attached to complete this report:

Plate 1	Vicinity Map
Plate 2	Site Exploration Plan
Plates 3 - 5	Test Pit Logs
Plate 6	Typical Footing Drain Detail

We appreciate the opportunity to be of service on this project. Please contact us if you have any questions, or if we can be of further assistance.

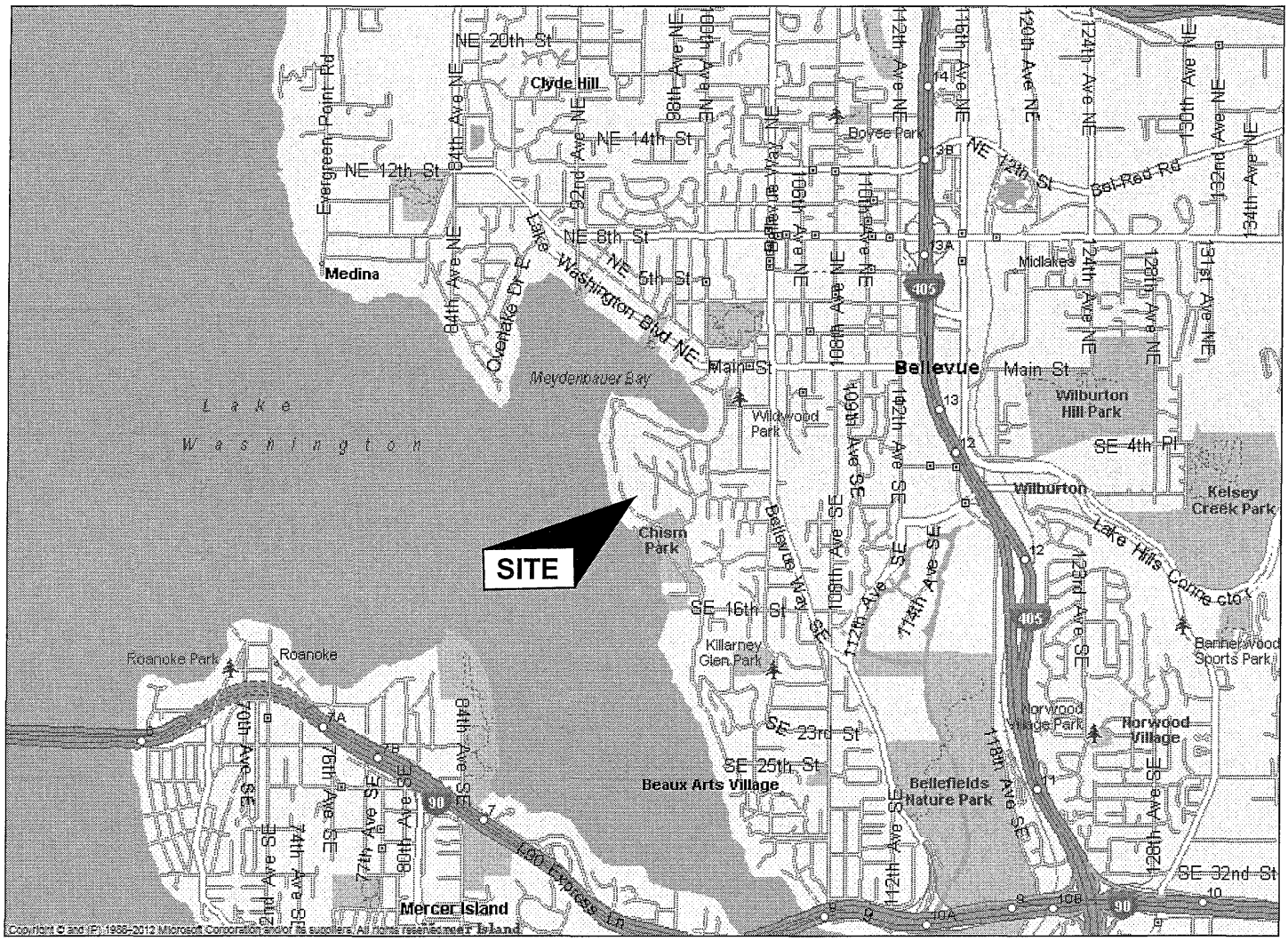
Respectfully submitted,

GEOTECH CONSULTANTS, INC.



D. Robert Ward, P.E.
Principal

DRW:mw



(Source: Microsoft MapPoint, 2013)

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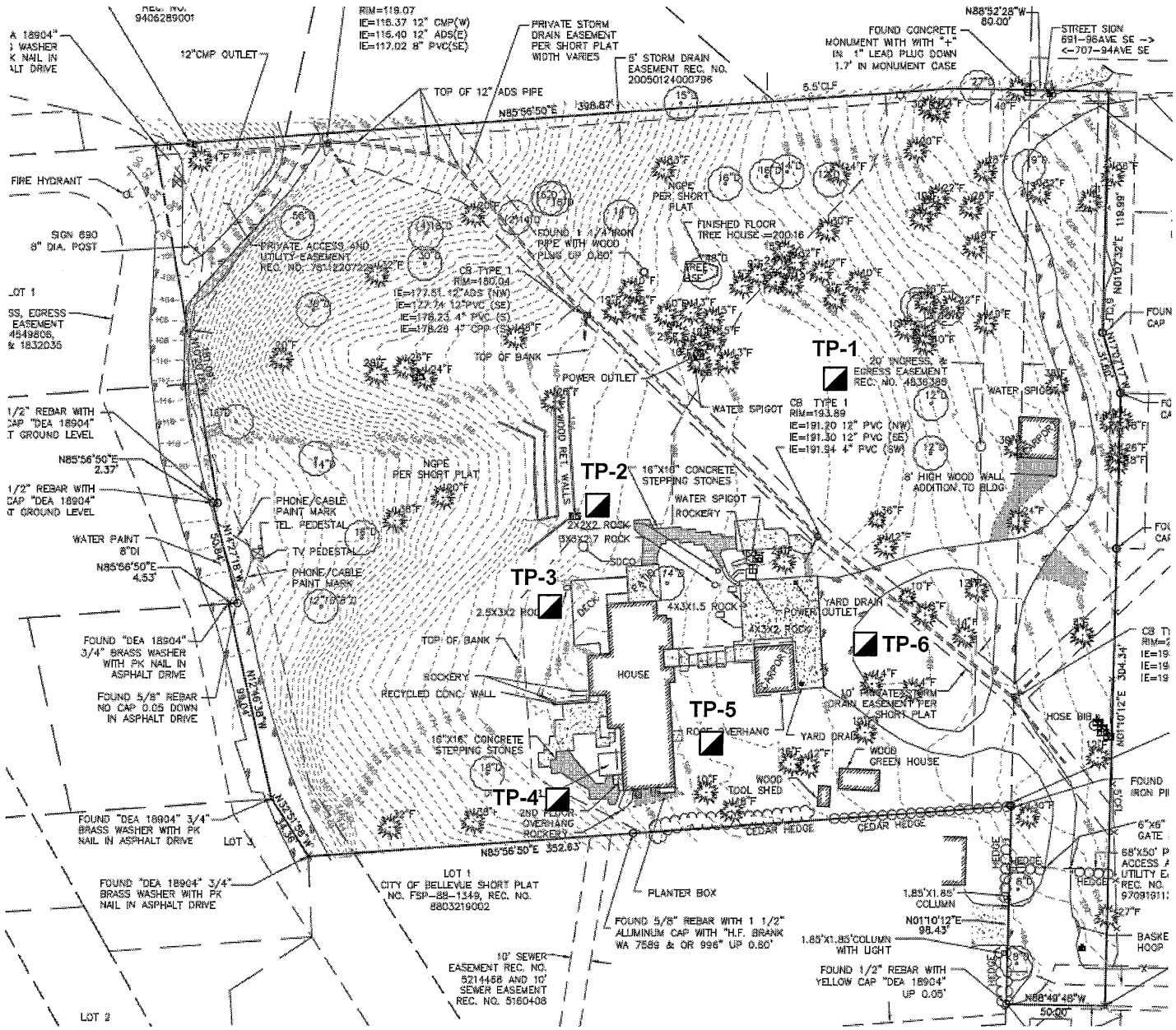
VICINITY MAP

707 - 94th Avenue Southeast
Bellevue, Washington

Job No:	Date:		Plate:
17132	May 2017		1



Legend:

◪ Test Pit Location

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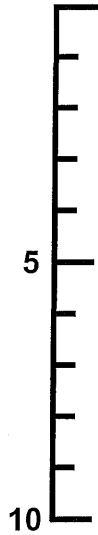
SITE EXPLORATION PLAN

707 - 94th Avenue Southeast
Bellevue, Washington

Job No:	Date:		Plate:
17132	May 2017	No Scale	2

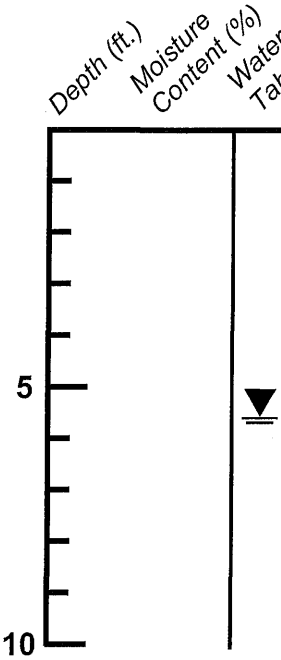
TEST PIT 1



USCS	Description
	Topsoil
SM	Rust-brown mottled gray-brown silty SAND with zones of sand; fine to coarse-grained, moist, medium-dense
ML	Rust-brown mottled gray-brown SILT, non-plastic, moist, medium-dense to dense -becomes gray

* **Test Pit terminated at 7.0 feet on October 23, 2014.**
* **No groundwater seepage was observed during excavation.**
* **No caving observed during excavation.**

TEST PIT 2



USCS	Description
FILL	Brown silty SAND, fine to coarse-grained, moist, loose to medium-dense **(FILL)**
FILL	Brown SILT with sand and trace organics, fine to coarse-grained, moist, loose to medium-dense **(FILL)** -becomes wet
	Topsoil
SM	Gray silty SAND with zones of sand, fine to coarse-grained, moist, medium-dense -becomes medium-dense to dense

* **Test Pit terminated at 8.5 feet on October 23, 2014.**
* **Groundwater seepage was observed at 5.5 feet during excavation.**
* **Caving was observed below 4.5 feet during excavation.**

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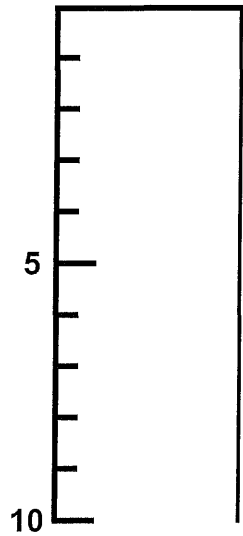
TEST PIT LOG

707 - 94th Avenue Southeast
Bellevue, Washington

Job	Date:	Logged by:	Plate:
17132	May 2017	TRC	3

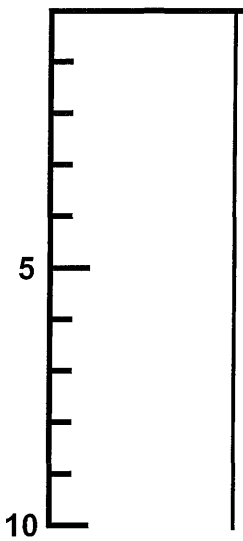
TEST PIT 3



USCS	Description
SM	Brown silty SAND with gravel, fine to coarse-grained, moist, loose to medium-dense -becomes medium-dense
ML	Rust-brown mottled gray-brown SILT with zones of sand and gravel, non-plastic, fine to coarse grained, moist, medium-dense to dense

* **Test Pit terminated at 5.5 feet on October 23, 2014.**
* **No groundwater seepage was observed during excavation.**
* **No caving observed during excavation.**

TEST PIT 4



USCS	Description
	Topsoil
SM	Gray-brown silty SAND, fine to coarse-grained, wet, loose -becomes medium-dense
ML	Rust-brown mottled gray-brown SILT, non-plastic, moist, medium-dense -becomes medium-dense to dense

* **Test Pit terminated at 5.5 feet on October 23, 2014.**
* **No groundwater seepage was observed during excavation.**
* **No caving observed during excavation.**

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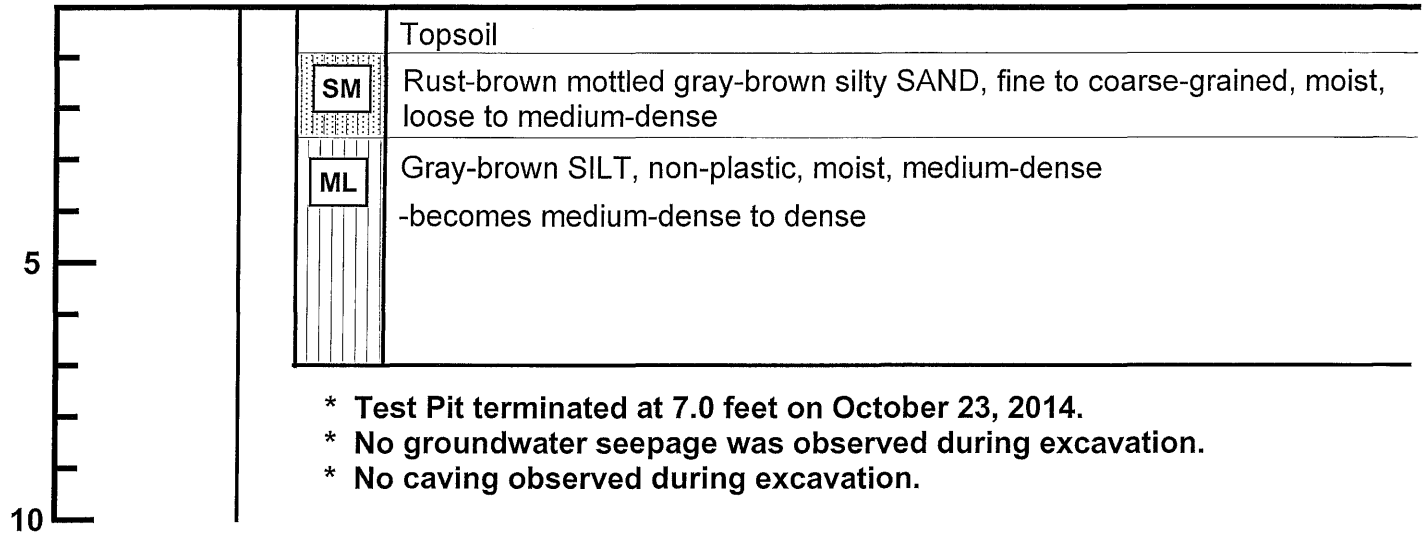
TEST PIT LOG

707 - 94th Avenue Southeast
Bellevue, Washington

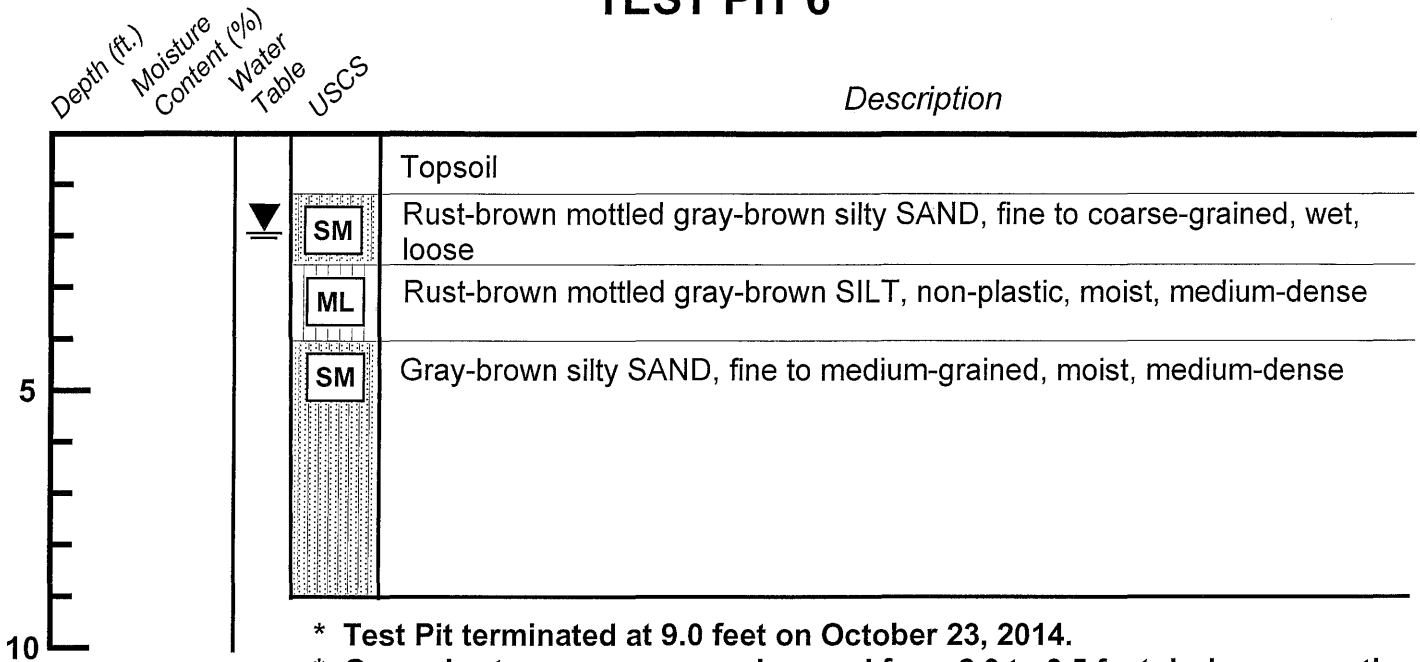
Job	Date:	Logged by:	Plate:
17132	May 2017	TRC	4

TEST PIT 5



* **Test Pit terminated at 7.0 feet on October 23, 2014.**
* **No groundwater seepage was observed during excavation.**
* **No caving observed during excavation.**

TEST PIT 6



* **Test Pit terminated at 9.0 feet on October 23, 2014.**
* **Groundwater seepage was observed from 2.0 to 3.5 feet during excavation.**
* **No caving observed during excavation.**

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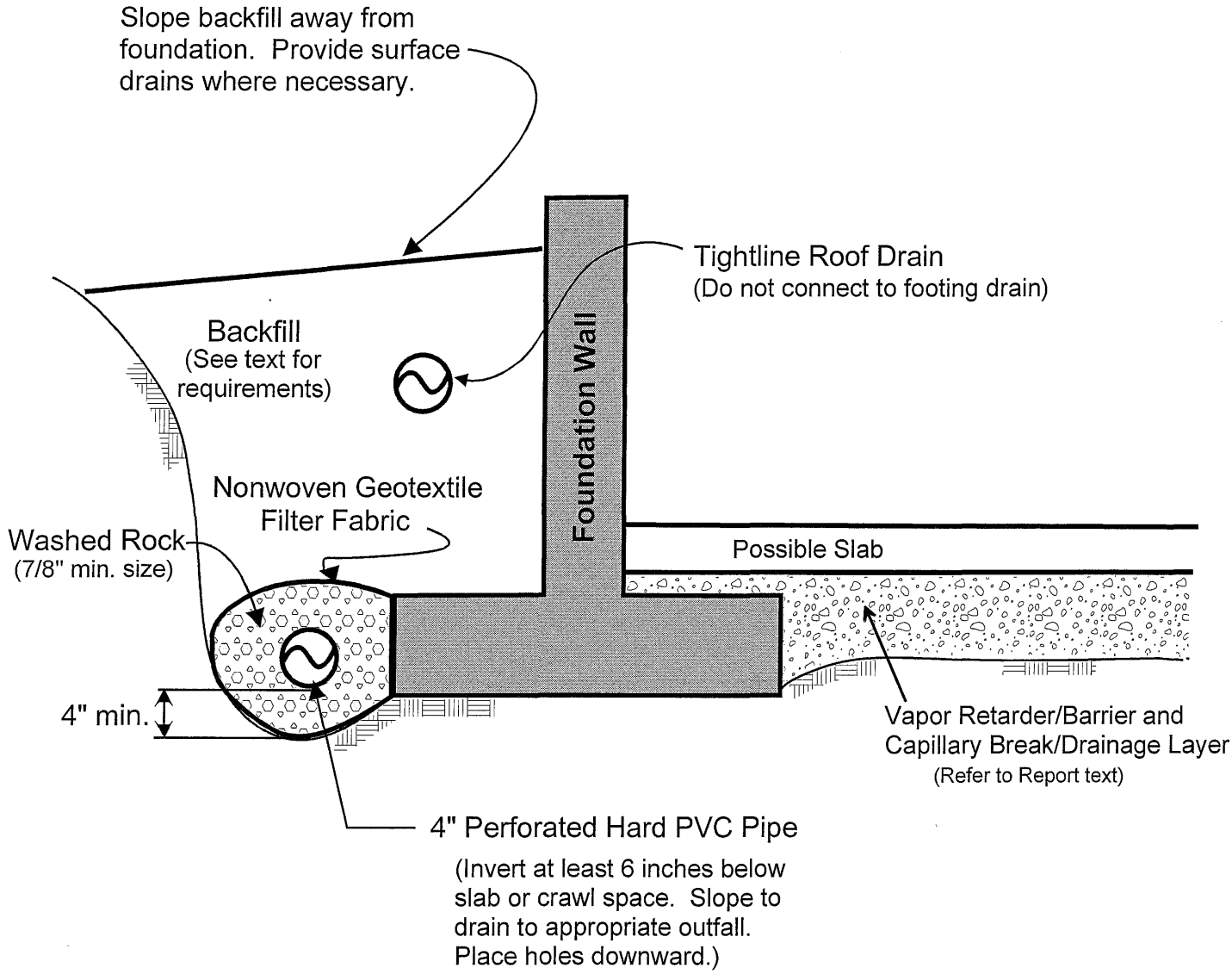
TEST PIT LOG

707 - 94th Avenue Southeast
Bellevue, Washington

Job	Date:	Logged by:	Plate:
17132	May 2017	TRC	5



NOTES:

(1) In crawl spaces, provide an outlet drain to prevent buildup of water that bypasses the perimeter footing drains.

(2) Refer to report text for additional drainage, waterproofing, and slab considerations.

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FOOTING DRAIN DETAIL

707 - 94th Avenue Southeast
Bellevue, Washington

Job No:	Date:		Plate:
17132	May 2017		6